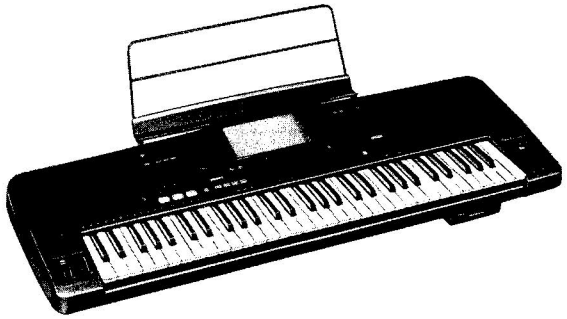
ORDER NO. EMID951588
A5

Service Manual

PCM Keyboard

SX-KN3000

(M), (MC), (XM), (EN), (EH), (EF), (EZ), (EW), (EA), (EP), (EK), (XL), (XR), (XS), (XD), (XT), (X), (XP)



AREAS

(M):	U.S.A.
(MC):	Canada
(XM):	Mexico
(EN):	Norway, Sweden, Denmark, Finland
(EH):	Holland, Belgium
(EF):	France, Italy
(EZ):	Germany
(EW):	Switzerland
(EA):	Austria
(EP):	Spain, Portugal, Greece, Singapore
(EK):	the United Kingdom
(XL):	New Zealand
(XR):	Australia
(XS):	Malaysia, South Africa
(XD):	Saudi Arabia, Hong Kong, Kuwait
(XT):	Taiwan
(X):	Thailand, Indonesia, Iran, U.A.E., Panama, Argentina, Peru, Brasil
(XP):	Philippines

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

■ Specifications

KEYBOARD	61 KEYS (WITH INITIAL/AFTER TOUCH)
SOUND GENERATOR	PCM
MAXIMUM NUMBER OF NOTES PRODUCED SIMULTANEOUSLY	64 NOTES
SOUNDS	260 SOUNDS +16 DRUM KITS (KEYBOARD PERC) GROUP : PIANO & E PIANO, HARPSI & MALLET, GUITAR, SPECIAL PERC, STRINGS & VOCAL, ORGAN & ACCORDION, BRASS, REED, FLUTE & ETHNIC, SYNTH LEAD, BASS, SYNTH PAD, KEYBOARD PERC, PERC & EFFECT DIGITAL DRAWBAR (16', 5-1/3', 8', 4', 2-2/3', 2', 1-3/5', 1-1/3', 1')
EFFECTS	DIGITAL EFFECT, DSP EFFECT, SUSTAIN, DIGITAL REVERB
PART SELECT	RIGHT 1, RIGHT 2, LEFT
TRANSPOSE	G-C-F#
RHYTHM	100 RHYTHMS ×4 VARIATIONS GROUP : 8 BEAT 1, 8 BEAT 2, 16 BEAT, JAZZ ROCK & SOUL, FUNK & LATIN ROCK, DANCE POP, BIG BAND & SWING, ROCK (OTHERS), JAZZ COMBO, U.S. TRAD, MARCH & WALTZ, TRAD & SHOW TIME, LATIN 1, LATIN 2
CONTROLS	MAIN VOLUME, BALANCE, MUTE, CONDUCTOR, START/STOP, INTRO & ENDING 1, INTRO & ENDING 2, FILL IN 1, FILL IN 2, COUNT INTRO, SYNCHRO & BREAK, TEMPO/PROGRAM, TAP TEMPO, SPLIT POINT
MANUAL SEQUENCE PADS	15 BANKS×3 (MEMORY : 3 BANKS×3, STORAGE CAPACITY : APPROX. 1200 NOTES), RECORD/STOP
AUTO PLAY CHORD	ONE FINGER, FINGERED, PIANIST, MEMORY, ON BASS, DYNAMIC ACCOMP, MUSIC STYLE ARRANGER, SOUND ARRANGER
ONE TOUCH PLAY	○ (ONE TOUCH PLAY/MUSIC STYLE SELECT)
TECHNI-CHORD	○
PANEL MEMORY	3 BANKS × 8, SET
SEQUENCER	16 TRACKS RESOLUTION : 96 PULSES PER QUARTER-NOTE STORAGE CAPACITY : APPROX. 40000 NOTES (10 SONGS MAX.) INPUT MODES : EASY RECORD, REALTIME RECORD, STEP RECORD FUNCTIONS : TRACK ASSIGN, EDIT, PUNCH RECORD, SONG SELECT/NAME, MEDLEY, AFTER TOUCH SET

Technics

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COMPOSER	5 PARTS : BASS, ACCOMP 1, ACCOMP 2, ACCOMP 3, DRUMS STORAGE CAPACITY : APPROX. 10000 NOTES INPUT MODES : EASY COMPOSER, REALTIME RECORD, STEP RECORD FUNCTIONS : COMPOSER CHORD MAP, MODE SELECT, COPY, LOAD SINGLE COMPOSER PATTERN, BEND RANGE, SEQ TO COMP COPY, COMPOSER LOAD MEMORY : 3 BANKS×10 (VARIATION 1-4, INTRO 1, 2, FILL IN 1, 2, ENDING 1, 2)
MEMORY & CONTROL	INITIAL, DISK LOAD, DISK SAVE, MIDI FILE DIRECT PLAY, FOOT SWITCH SETTING, FLOPPY DISK FORMAT, PANEL MEMORY MODE, MUSIC STYLE ARRANGER MODE, DYNAMIC ACCOMP RESPONSE
SOUND SETTING	PART SETTING (VOLUME, SUSTAIN, EFFECT, PAN, KEY SHIFT, TUNING, PITCH BEND RANGE, OTHERS), MIXER, OVERALL TOUCH SENSITIVITY, MASTER TUNING, TECHNI-CHORD TYPE, LEFT HOLD, REVERB SETTING, DSP EFFECT, KEY SCALING
SOUND EDIT	EASY EDIT, TONE SELECT, TONE LAYER, PITCH, FILTER, AMPLITUDE, DIGITAL EFFECT, CONTROLLER MEMORY : 2 BANKS×20
MIDI	BASIC CHANNEL, CONTROL MESSAGE, OCTAVE SHIFT & LOCAL ON/OFF, REALTIME MESSAGES, COMMON SETTING, P.MEM OUTPUT, MIDI PRESETS, INPUT/OUTPUT SETTING, SYSEX BULK DUMP, GENERAL MIDI
EXTERNAL MEMORY	BUILT-IN 3.5 inch FLOPPY DISK DRIVE FOR 2HD (1.44 MB), 2DD (720 KB) SUPPORTS HARD DISK DRIVE (SOLD SEPARATELY)
DISPLAY	LCD (320×240 DOTS) PAGE, CONTRAST, EXIT, DISPLAY HOLD
HELP	○
DEMO	○
TERMINALS	PHONES, LINE OUT (R/R+L, L), AUX IN (R/R+L, L), FOOT SW 1, 2, EXP PEDAL, MIDI (IN, OUT, THRU)
OUTPUT	18 W × 2
SPEAKERS	14 cm×2, 6.5 cm×2
POWER REQUIREMENT	110 W, 100 W (CANADA), 80 W (U.S.A. AND MEXICO)
	AC120/220/240 V 50/60 Hz AC120 V 60 Hz (NORTH AMERICA AND MEXICO) AC230 V 50/60 Hz (NEW ZEALAND AND PHILIPPINES) AC230-240 V 50/60 Hz (EUROPE)
DIMENSIONS (W × H × D)	105.0 cm×15.0 cm×37.8 cm (41-11/32"×5-29/32"×14-7/8") WITHOUT MUSIC STAND
NET WEIGHT	13.5 kg (29.8 lbs.) WITHOUT MUSIC STAND
ACCESSORIES	MUSIC STAND, AC CORD, DUST COVER

•Specification are subject to change without notice for further improvement.

WARNING

To prevent the risk of fire, smoke, or electrical shock and to ensure safe operation, please be sure to follow the safety guidelines below.

1. At places where special caution is required, the necessary safety precautions are clearly labeled or printed, for example, on the cabinet, or on the part concerned. Please follow these safety precautions, and also those listed in the Owner's Manual.

2. Parts which have a ⚠ mark in the circuit diagram or in the parts list are essential for safety. When replacing these parts, be sure to use only the specified parts.

3. Use the specified types for internal wiring (double-insulated wiring, etc.).

4. When replacing parts on the AC primary side (power transformer, electric switch, electrical cord, noise-prevention condenser, etc.), wind the lead wire and secure it by soldering.

5. Do not let the wiring come into contact with heat-emitting devices (fuse resistor, radiator plate, etc.).

6. When replacing the wiring, make sure that it is not in contact with the unfinished or rough edge of a part.

7. When replacing the power cord (except for the plug-in type), tug it from various directions to confirm that it does not slip out of place.

8. Spacing
   If soldering was done on the AC primary circuit, confirm that the interval between the soldered terminals or between the terminal and surrounding metallic parts is at least the minimum required (Between the primary circuit and the chassis: at least 6.5 mm; between primary circuit terminals: at least 4.0 mm; between primary circuit terminals and secondary circuit terminals: at least 6.5 mm.).

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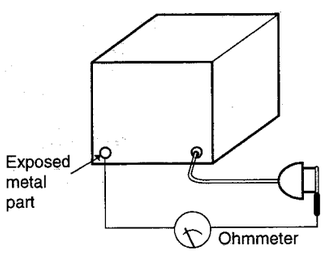
SAFETY PRECAUTION (This "safety precaution" is for the U.S.A. only)

● Safety Precaution

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only the manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc..
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

● Insulation Resistance Test

1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw heads, connectors, control shafts, handle brackets, etc..Measurements should range from 4 MΩ to infinity for all exposed parts.

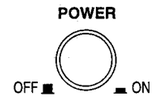


Resistance = 4MΩ to ∞

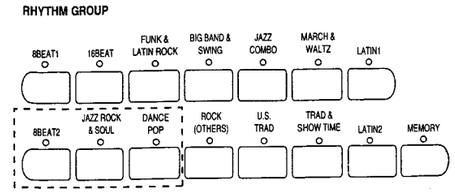
INITIAL SETTING

■ The initial setting function is used to return to the original factory settings, and to reset the customer settings and misoperations.

1. Press the **POWER** button to turn off the instrument.

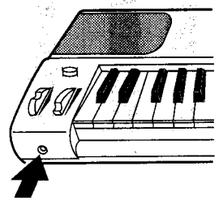


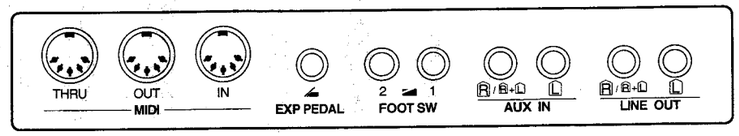
2. While pressing the three leftmost buttons in the **RHYTHM GROUP** section (**8 BEAT 2**, **JAZZ ROCK & SOUL** and **DANCE POP**) at the same time, turn the **POWER** button on again.



NOTE:
All stored data in the **SEQUENCER** and **COMPOSER** and other setting are initialized with this operation.

TERMINALS





(on the rear panel)

PHONES ( ) (Use headphones with over 16 Ω impedance.)
For silent practice headphones may be used. When plugged in, the speaker system is automatically switched off, and sound is heard only through the headphones.

MIDI (Musical Instrument Digital Interface)
MIDI is the standard specification that enables connection to equipment such as synthesizers and personal computers. Data transmission and reception are possible between the Technics Keyboard and other instrument provided with MIDI terminals.

IN : The terminal that receives data from external equipment.
OUT : The terminal that transmits data from this instrument to external equipment.
THRU: The terminal that transfers data from the **IN** terminal directly to other equipment.
• Use a 5-pin DIN cord (less than 15 m long) for these connections.

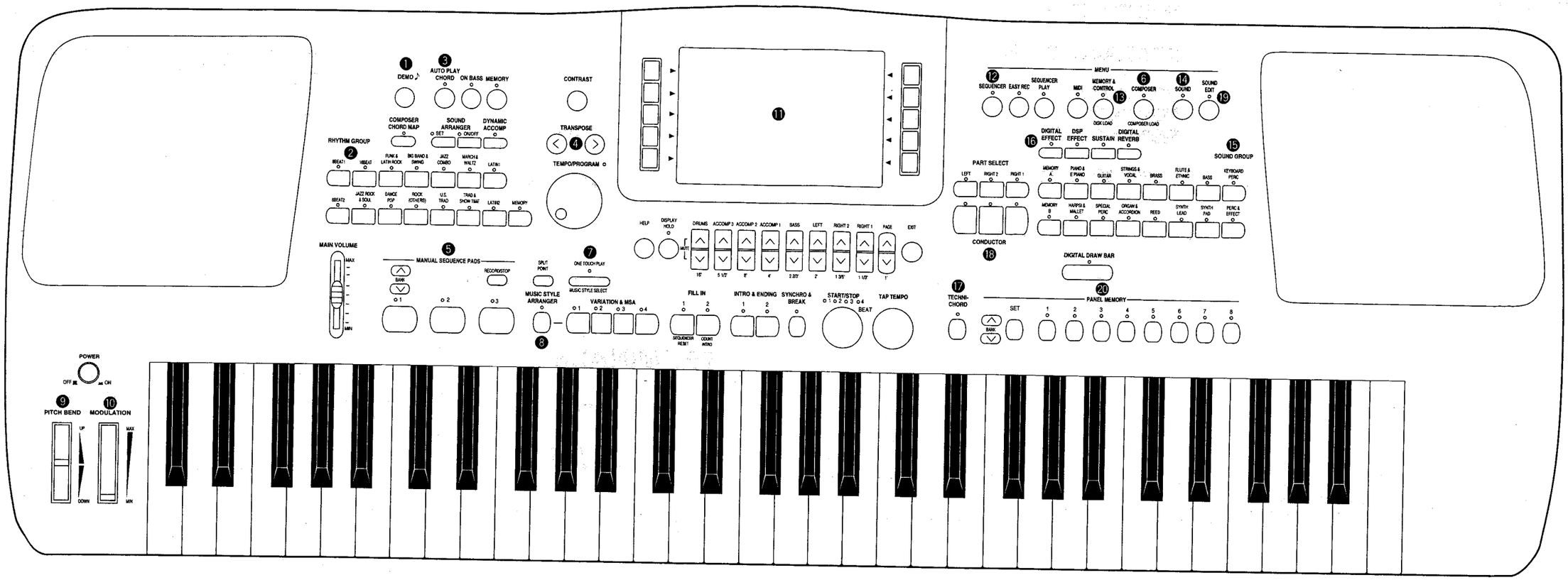
EXP PEDAL
The optional SZ-E2 Expression Pedal can be connected to this terminal to control the volume.

FOOT SW 1, 2
The optional SZ-P1 Foot Switch can be connected to this terminal to control various functions.

AUX IN (Input level 0.5 Vrms, 6 kΩ)
Other instruments such as a sound generator can be connected to this terminal, and the sound will be output from the Keyboard's speakers. To receive monaural sound, connect the other instrument to the **R/R+L** terminal. (Do not connect the **L** terminal.)

LINE OUT (Output level 1.5 Vrms, 600 Ω)
By connecting an external high-power amplifier, the sound can be reproduced at a high volume. To output monaural sound, connect the external equipment to the **R/R+L** terminal. (Do not connect the **L** terminal.)

ARRANGEMENT OF CONTROL PANEL



❶ **DEMO**
Pre-recorded performances are used to demonstrate the individual appeal of the rhythms, sounds and other features.

❷ **RHYTHM GROUP**
Various rhythm patterns are available for each rhythm group. Other rhythm controls are **START/STOP**, **SYNCHRO & BREAK**, **INTRO & ENDING 1** and **2**, **COUNT INTRO** and **FILL IN 1** and **2**. The volume is adjusted with the **DRUMS** balance buttons below the display.

❸ **AUTO PLAY CHORD**
An automatic accompaniment appropriate for the selected rhythm is produced when you play a chord. **MEMORY** allows you to continue the accompaniment even after the chord keys are released.
The volume for each part of the **AUTO PLAY CHORD** (**DRUMS, BASS, ACCOMP 1, 2, 3**) is adjusted with the respective balance buttons below the display.

❹ **TRANSPOSE**
C is the standard setting, but you can raise or lower the key of the entire instrument with these two buttons. The transposed key is shown on the normal performance display.

❺ **MANUAL SEQUENCE PADS**
Add various phrases to your performance with the pad buttons.

❻ **COMPOSER**
Create original rhythm patterns, either in realtime or with the step record method, or modify preset rhythms. Store up to 12 new rhythms in the reserved memory locations and recall them as you play, just like the preset rhythms.

❼ **ONE TOUCH PLAY**
Select a rhythm and press the **ONE TOUCH PLAY** button until the panel settings change. The sounds and effects perfect for the selected rhythm are automatically set in seconds. Or press the **ONE TOUCH PLAY** button briefly to access the MUSIC STYLE SELECT display. Choose one of the many music styles and the appropriate sounds, effects and even rhythm are set instantly.

❽ **MUSIC STYLE ARRANGER**
A tap of a button during your performance changes the rhythm and sounds to a simpler or flashier arrangement to match the feeling of the music.

❾ **PITCH BEND**
This wheel is moved up or down with your hand to create a continuous change in pitch. The wheel returns to the center position automatically when it is released.

❿ **MODULATION**
Add vibrato to the sound by turning the wheel upwards.

⓫ **DISPLAY** (LCD screen)
Display performance information, function settings and other messages.
- Use the **CONTRAST** button to adjust the display so that it is easy to read.

⓬ **SEQUENCER**
With this feature you can separately play and record the parts for an entire song. Then have the whole ensemble performance played back automatically. This is a true 16-track sequencer, with full realtime recording, step recording and editing features.

⓭ **MEMORY & CONTROL**
The settable functions in this mode include initialization, foot switch function-assignment, and setting related to Disk Drive operation etc. .

⓮ **SOUND**
This button is used for making the various sound, volume and effect settings for each part, as well as tuning and **TECHNI-CHORD** type etc. , by reading the display.

⓯ **SOUND GROUP**
Various sounds are available for each sound group.

⓰ **Effects**
Turn the **DIGITAL REVERB** button on to add reverberation to the sound. **DIGITAL EFFECT** gives the sound a thickness and diffusion. The **DSP EFFECT** changes the quality of the sound. When **SUSTAIN** is on, the musical tones fade gradually after the keys are released.

⓱ **TECHNI-CHORD**
Chord notes played on the left section of the keyboard are added to melody notes played on the right section. Choose from four harmonic styles.

⓲ **CONDUCTOR**
These buttons allow you to assign a different sound to each part, and then assign the desired part to the entire keyboard, assign a different part to each section of the keyboard, or mix parts. When the keyboard is divided into sections, change the dividing point with the **SPLIT POINT** button.

⓳ **SOUND EDIT**
Modify preset sounds to create new and unique sounds.

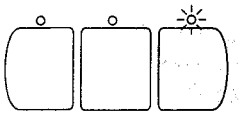
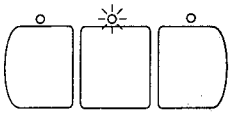
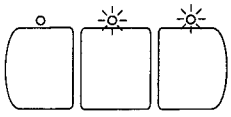
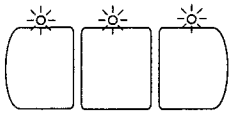
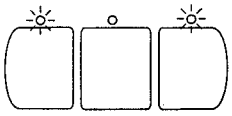
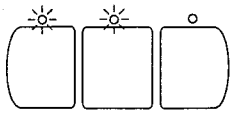
⓴ **PANEL MEMORY**
Set up the sounds and effects, and then store them in these 24 memories (3 BANKS × 8 memory locations) buttons for instant recall as you play. You can expand the range of storable settings to include the rhythm selection, tempo setting and more.

Disk Drive
This Disk Drive allows you to store **SEQUENCER** performances and other data on 3.5-in. 2DD/2HD memory disk.

CONDUCTOR SETTINGS

The **CONDUCTOR** buttons are used to assign sounds to the keyboard in many different ways. For example, you can assign two sounds to the entire keyboard so that playing one key will produce two sounds. You can even split the keyboard into right and left sections (**SPLIT**), and assign a different sound to each section.

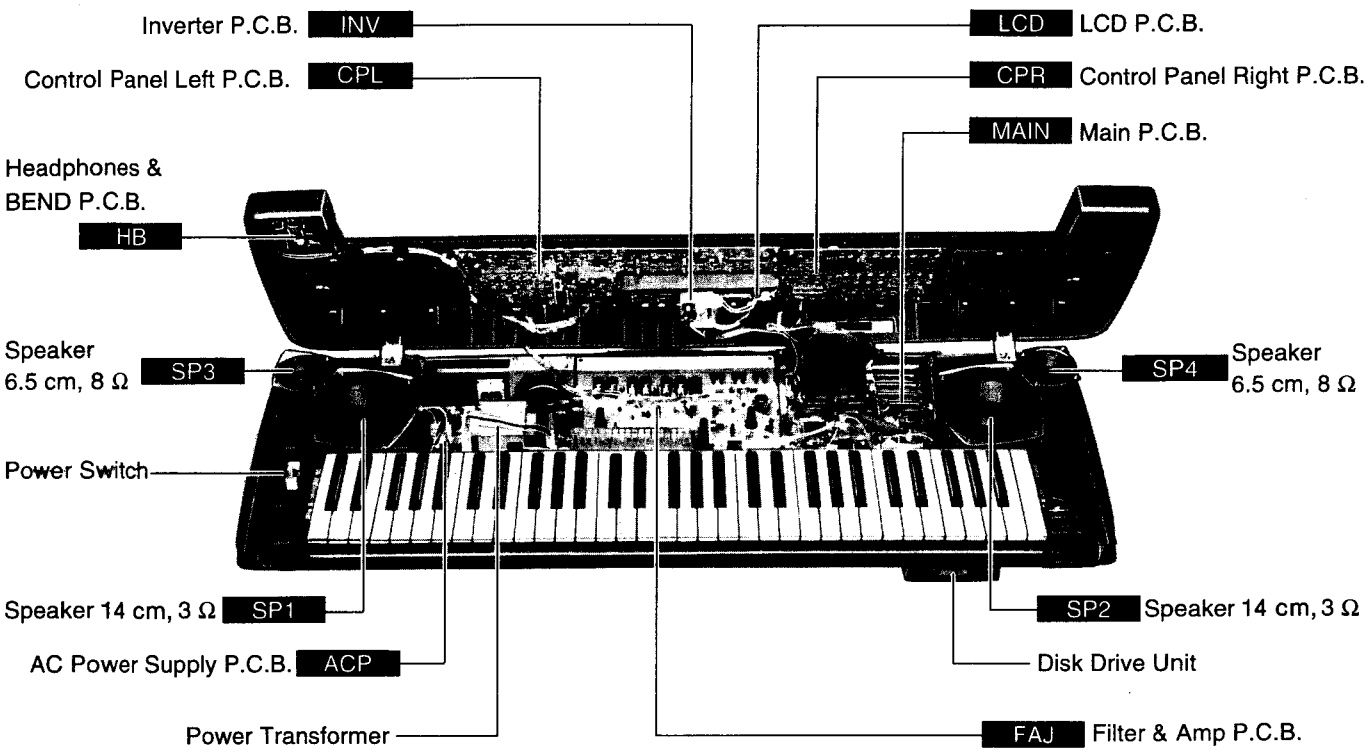
CONDUCTOR

CONDUCTOR settings	How sounds are assigned to the keyboard
 CONDUCTOR	All keys produce the **RIGHT 1** sound. **RIGHT 1**
 CONDUCTOR	All keys produce the **RIGHT 2** sound. **RIGHT 2**
 CONDUCTOR	All keys produce both the **RIGHT 1** sound and the **RIGHT 2** sound. **RIGHT 1 + RIGHT 2**
 CONDUCTOR	The left keys produce the **LEFT** sound and the right keys produce the **RIGHT 1** sound and the **RIGHT 2** sound. **LEFT** | **RIGHT 1 + RIGHT 2**
 CONDUCTOR	The left keys produce the **LEFT** sound and the right keys produce the **RIGHT 1** sound. **LEFT** | **RIGHT 1**
 CONDUCTOR	The left keys produce the **LEFT** sound and the right keys produce the **RIGHT 2** sound. **LEFT** | **RIGHT 2**

MEASUREMENTS AND ANDJUSTMENTS

ADJUSTMENT	MEASURING CONDITIONS	EQUIPMENT	ADJUSTMENT P.C.B.	ADJ. POINT	CONNECT METER TO	METER READING
AFTER TOUCH SENSOR Sensitivity	any position	Oscilloscope	MKB2 P.C.B.	VR1	CN5-3pin	6.0V
	1. Press one of the any keys hardly and check the CN5-3pin voltage. The voltage will increase and became steady. 2. Adjust the voltage to 6.0V with VR1 at that time.					

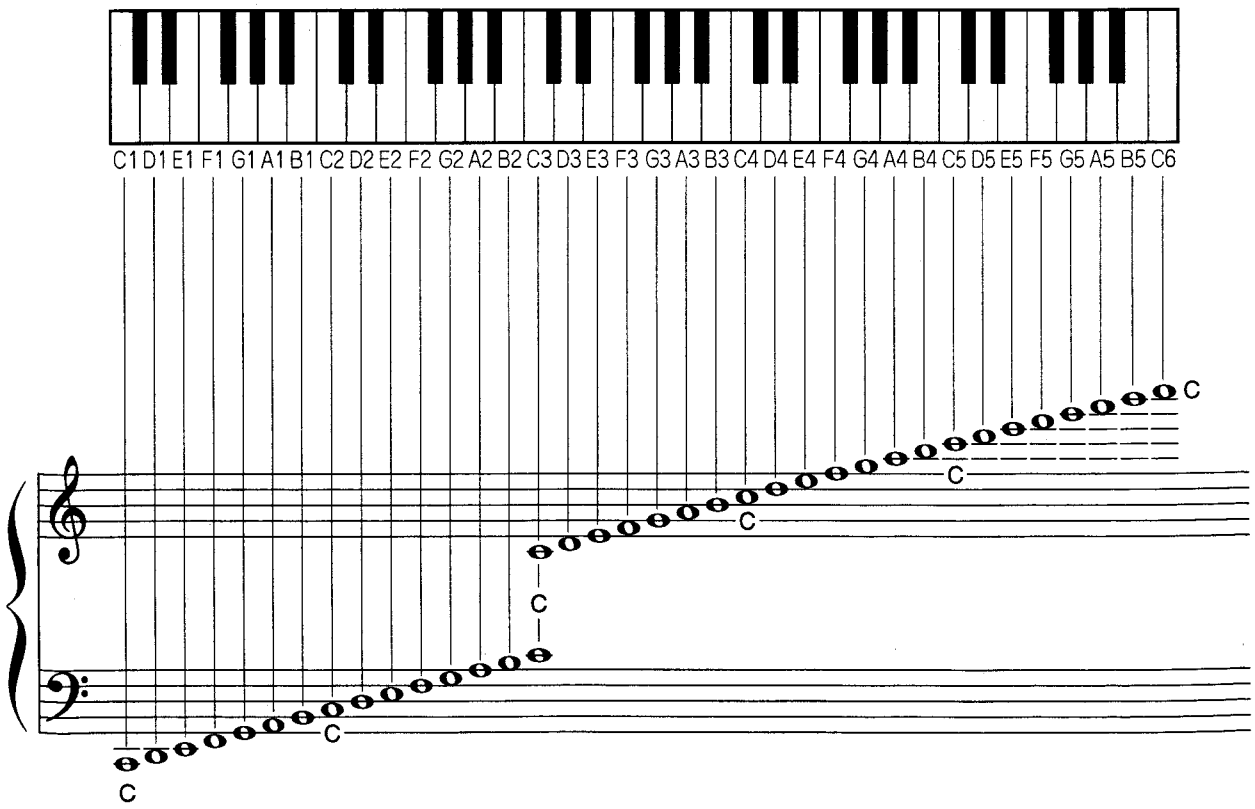
PARTS LOCATION


Inverter P.C.B. INV
Control Panel Left P.C.B. CPL
Headphones & BEND P.C.B.
HB
Speaker 6.5 cm, 8 Ω SP3
Power Switch
Speaker 14 cm, 3 Ω SP1
AC Power Supply P.C.B. ACP
Power Transformer
LCD LCD P.C.B.
CPR Control Panel Right P.C.B.
MAIN Main P.C.B.
SP4 Speaker 6.5 cm, 8 Ω
SP2 Speaker 14 cm, 3 Ω
Disk Drive Unit
FAJ Filter & Amp P.C.B.

[Photo-1]

KEYBOARD RANGES

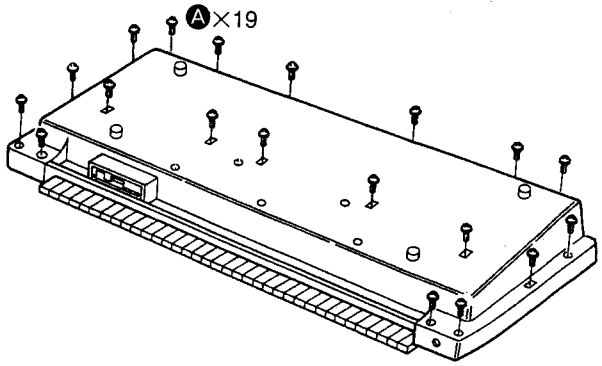
This keyboard features Touch Response, by which you control the volume by playing the keys harder or softer.



DISASSEMBLY INSTRUCTIONS

1 Opening the cabinet

1. Turn the keyboard cabinet upside down as shown in Fig. 1, and remove the bottom screws (Ⓐ 19 pcs.).
2. Place the keyboard bottomside down, and open the top cabinet .



[Fig. 1]

2 Removing the printed circuit boards

• Open the cabinet (see step 1).

MAIN P.C.B.

1. Remove the hard disk slot holding screws (Ⓑ 3 pcs.).
2. Remove the MAIN P.C.B. holding screws (Ⓒ 4 pcs.).

FAJ P.C.B.

• Remove the FAJ P.C.B. holding screws (Ⓓ 5 pcs.).

ACP P.C.B.

• Remove the ACP P.C.B. holding screws (Ⓔ 2 pcs. and Ⓕ 1 pc.).

CPR P.C.B.

• Remove the CPR P.C.B. holding screws (Ⓖ 9 pcs.).

CPL P.C.B.

1. Pull off the TEMPO/PROGRAM dial and MAIN VOLUME knob.
2. Remove the CPL P.C.B. holding screws (Ⓗ 21 pcs.).

INV P.C.B.

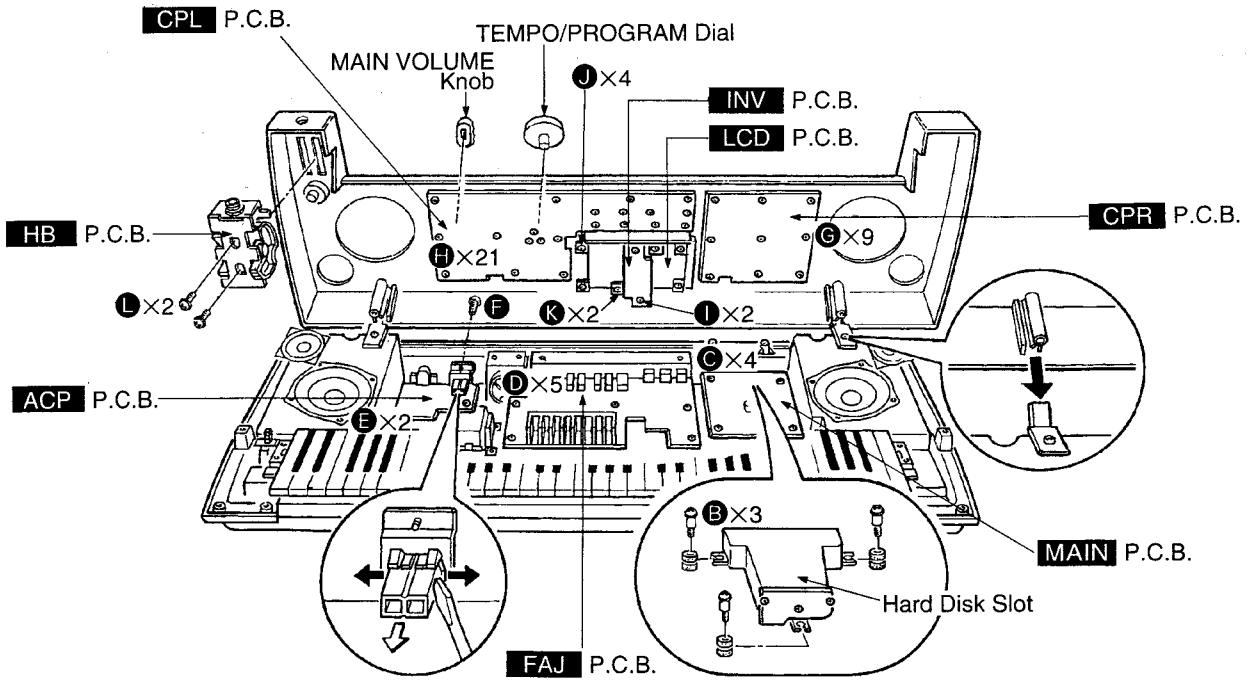
• Remove the INV P.C.B. holding screws (Ⓘ 2 pcs.).

LCD P.C.B.

1. Remove the INV P.C.B..
2. Remove the LCD P.C.B. holding screws (Ⓙ 4 pcs. and Ⓚ 2 pcs.).

HB P.C.B.

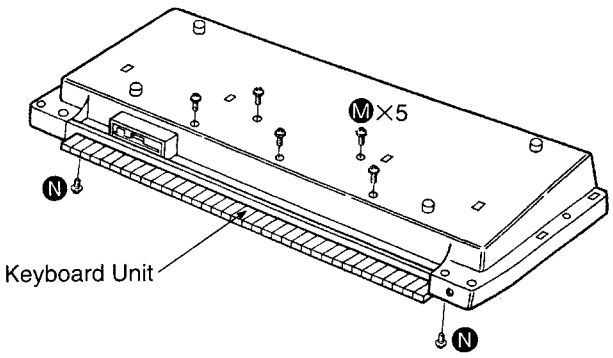
• Remove the HB P.C.B. holding screws (Ⓛ 2 pcs.).



[Fig. 2]

3 Removing the keyboard

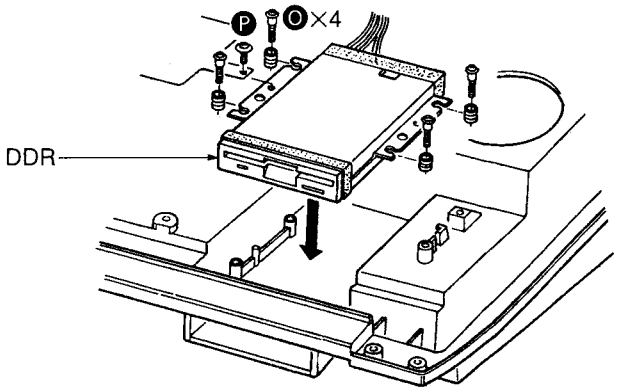
1. Turn the keyboard cabinet upside down as shown in Fig. 1, and remove the bottom screws (Ⓐ 19 pcs.).
2. Remove the keyboard assembly holding screws (Ⓜ 5 pcs.).
3. Place the keyboard bottomside down, and open the top cabinet.
4. Remove the keyboard assembly holding screws (Ⓝ 2 pcs.).



[Fig. 3]

4 Removing the digital disk recorder (DDR)

1. Remove the keyboard (see step 3).
2. Remove the DDR mounting screws (Ⓞ 4 pcs. and Ⓟ 1 pc.).

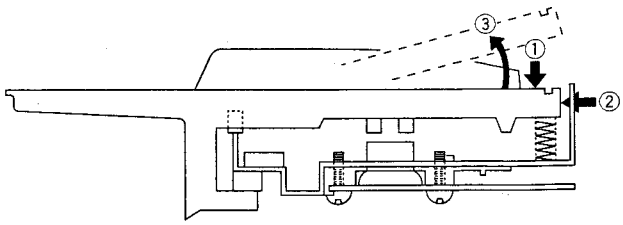


[Fig. 4]

5 Removing the keys (s)

1. Remove the keyboard assembly (see step 3).
2. Press downward on the rear of the key (Fig. 5-①).
3. While pressing downward onthe rear of the key, push the key forward and release it from the chassis (Fig. 5-②).
4. Lift the key and remove it from the chassis (Fig. 5-③).

NOTE:
To remove a black key, the white key to either side of it should be removed first.



[Fig. 5]

SYMPTOMS WHICH APPEAR TO BE SIGNS OF TROUBLE

The following changes in performance may occur in the Technics Keyboard but do not indicate trouble.

	Phenomenon	Remedy
Sounds and effects	The buttons, keys, etc. malfunction.	• Turn off the **POWER** button once, then turn it on again. If this procedure is not successful, turn off the **POWER** button once. Then, while pressing the three lower left buttons in the **RHYTHM GROUP** section (**8 BEAT 2**, **JAZZ ROCK & SOUL** and **DANCE POP**) at the same time, turn the **POWER** button on again. (Note that, in this case, all programmable settings, functions and memories return to their factory-preset status.)
	No sound is produced when the keys are pressed.	• The **MAIN VOLUME** is at the minimum setting. Adjust the volume with the **MAIN VOLUME** control. • The volumes for the selected parts are set to the minimum levels. Use the balance buttons to set the volumes of the relevant parts to appropriate levels. • The part is muted. • The local control for a part performed on the keyboard is set to OFF. Set the local control to ON.
	Only percussive instrument sounds are produced when the keyboard is played.	• In the **SOUND GROUP** section, the **KEYBOARD PERC** button is on.
	The volume is very low when the keyboard is played.	• The volume setting in the **SEQUENCER** contents is very low. Follow the INITIAL procedure to reset the settings.
	Some sounds cannot be selected.	• When the GENERAL MIDI status is set to on, The sounds which can be selected and operation which can be executed are limited. Turn the GENERAL MIDI status off to return the instrument to its normal operation.
	The sound you hear is different from the sound you selected.	• This sometimes occurs when you play back **SEQUENCER** or **COMPOSER** data which was created on a different model, or when MIDI data is received from a connected instrument. Select the desired sounds again.
Rhythm	The rhythm does not start.	• The **DRUMS** volume is set to the minimum level. Use the balance buttons to set the **DRUMS** volume to an appropriate level. • In the **RHYTHM GROUP** section, a rhythm in **MEMORY** with no stored pattern was selected. Select a different rhythm. • A **SEQUENCER PLAY** button is on. When you are not playing back the **SEQUENCER** performance, turn off the **SEQUENCER PLAY** button. • CLOCK is set to MIDI. Set CLOCK to INTERNAL. • The rhythm does not work when the GENERAL MIDI mode is set to ON. Turn the GENERAL MIDI status off to return the instrument to its normal operation.

	Phenomenon	Remedy
AUTO PLAY CHORD	No sound is produced for the automatic accompaniment.	• In the **RHYTHM GROUP** section, a rhythm in **MEMORY** with no stored pattern was selected. Select a different rhythm.
	No sound is produced for the automatic accompaniment, or only the sounds of some parts are produced.	• An **ACCOMP** part does not sound if its corresponding volume is set to the minimum level. Use the respective balance buttons to set the **ACCOMP 1**, **2** and **3** volumes to appropriate levels.
SEQUENCER	Storage is not possible.	• The remaining memory capacity of the **SEQUENCER** is 0. Follow the SONG CLEAR or TRACK CLEAR procedure to erase the memory.
	Multi-track storage is not possible.	• The playback track has been selected, but the **START/STOP** button has not been pressed. A flashing track indicator shows the track which is ready for recording, and a lit track indicator shows a track which is ready for playback. To record one track while listening to another (playback) track, press the **START/STOP** button to begin playback.
	The playback measure indication is different from when the performance was recorded.	• The number of measures corresponds to the time signature of the rhythm selected at the start of recording. To change the rhythm in the middle of the song, record the rhythm change in the RHYTHM part.
COMPOSER	Storage is not possible.	• The remaining memory capacity of the **COMPOSER** is 0.
	Setting the time signature and number of measures is not possible.	• The time signature and number of measures cannot be changed for a pattern which is currently recorded in the **COMPOSER**. If you wish to change the time signature and/or measure data, first follow the procedure to clear the memory.
	The playback timing of the rhythm pattern is different from the timing with which it was recorded.	• The QUANTIZE function was on when the pattern was recorded and the timing was automatically corrected. Set the quantize level to a smaller note unit or to OFF when recording.
Disk Drive	The Disk Drive produces a noise during recording or playback.	• This occurs when the Disk Drive is reading a disk. It does not indicate a problem.
	When the procedure to load from a disk is performed, the contents of the keyboard memory are erased.	• When performing the load operation from a disk, the keyboard memory changes to that of the data loaded from the disk. If you wish to preserve a song which is stored in the keyboard memory, save it on a disk before performing the load procedure.
Other	Noise from a radio or TV can be heard.	• This sometimes occurs when electrical equipment such as a radio or TV is used near the instrument. Try moving such electrical equipment further away from the instrument. • The sound may be coming from a nearby broadcast station or amateur radio station. If the sound is bothersome, consult your dealer or service center.
	The cabinet becomes warm during use.	• This instrument has a built-in power source that heats the cabinet to some degree. This is not an indication of trouble.

ERROR DISPLAY

No.	Contents
00	The data on the disk that you are using is for a different product.
01	An error has occurred while the disk was loading. Please try again!
02	There is no disk in the Disk Drive.
03	The file that you tried to load is empty.
05	An error has occurred while the disk was saving. Please try again!
06	The disk that you are using is write protected. Please remove the write protection and try again.
07	The disk that you are using is full. Please use another disk.
08	An error has occurred while the disk was formatting. The disk that you are using may be faulty. Please try formatting another disk.
10	The data is already copy protected.
20	A problem has occurred with your **SEQUENCER** Data. This might be due to a damaged or faulty disk.
21	Memory full
22	It is necessary to press PUNCH OUT to complete this procedure.
23	It is impossible to change the time signature because it has already been set in the existing tracks.
24	A rhythm track already exists. It is impossible to assign two tracks to rhythm.
25	It is only possible to change the velocity on a melody track.
26	It is only possible to merge melody tracks. Tracks such as rhythm, chord and control cannot be merged.
27	It is only possible to copy melody tracks. Tracks such as rhythm, chord and control cannot be copied.
28	This song is too long to be saved as a MIDI file.
29	The MIDI file that you have tried to load exceeds the memory capacity of the KN3000 and cannot be played. The **SEQUENCER** memory has been cleared.
30	It is not possible to change the time signature or measure length of a **COMPOSER** pattern after it has been recorded. If you want to proceed, you must first clear the entire **COMPOSER** pattern.

No.	Contents
31	The time signature of the pattern from which you are copying is different from the **COMPOSER** memory that you are using. Either: Change the time signature of the **COMPOSER** memory or: Copy from a pattern that has the same time signature
32	Memory full
40	The Identification (ID) code of the system exclusive data received by the KN3000 is for a different product.
41	An error has occurred during system exclusive data reception. The data from the transmitting device may be incomplete. Please try again.
42	An error has occurred during system exclusive transmission. The data has not been received correctly. Please try again.
43	The file that you are trying to load was saved on a previous KN keyboard. It is only possible to load using the "ALL" option.
47	Please select a preset pattern.
54	Please select a USER bank (13 to 15).
55	Special tracks such as CHORD (APC), RHY and CTL exist in the song from which you are copying and are incompatible with the destination song because it is in the GM mode.
56	AUTO PUNCH recording has been unsuccessful because **SEQUENCER** operation was interrupted before the PUNCH OUT measure was reached.
57	The **COMPOSER** pattern you have chosen has a different time signature or number of measures from the other patterns in this COMPOSER CHORD MAP. All of the **COMPOSER** patterns used in a COMPOSER CHORD MAP must have the same time signature and number of measures.
58	The song that you have tried to load exceeds the KN3000's available memory and cannot be loaded. The selected song memory has been cleared. Please clear existing songs in the instrument's memory using SONG CLEAR to make more memory available, and try again.

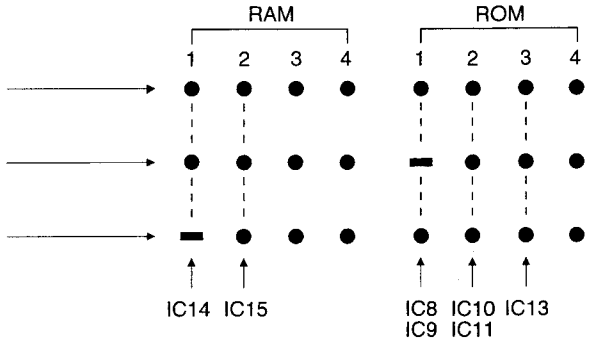
ABOUT THE SELF-DIAGNOSTIC FUNCTION

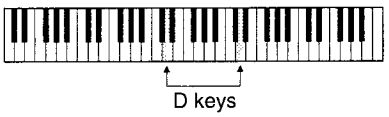
This model has some self-diagnostic capabilities. When set to the self-diagnostic mode, operation of various components can be verified by following the procedures in the chart below.

<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td>1</td><td>MAIN</td><td>RAM (IC14, 15), ROM (IC8-11, 13) check</td><td>1. Connect the CHECKING DEVICE (refer to page I-14) to CN12 on the MAIN P.C.B., and turn on the CHECKING DEVICE switch.
2. Turn on the power switch.</td></tr>
<tr><td></td><td></td><td colspan="2">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 8 times. The first 4 flashes are for the RAM check, and the latter 4 flashes are for the ROM check. The order of the LED flashes correspond to the respective IC numbers as shown below. If an IC is defective, the corresponding flash time is longer.

Examples
1. RAM OK, ROM OK
2. RAM OK, ROM (IC8, 9) defective
3. RAM (IC14) defective, ROM OK

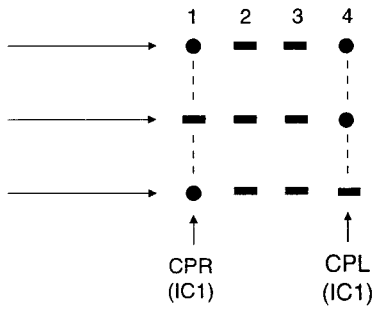
NOTE : ● indicates short flash time
▬ indicates long flash time

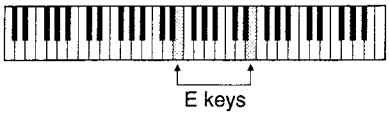
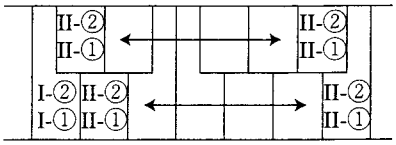
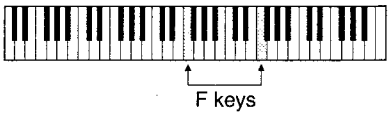
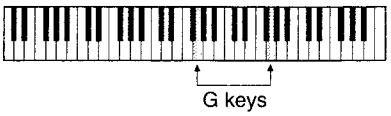
 
</td></tr>
<tr><td>2</td><td>CPL
CPR</td><td>CPU (IC1) check</td><td>1. Connect the CHECKING DEVICE to CN12 on the MAIN P.C.B. (The Checking Device switch should be off).
2. Press and hold the two D keys shown below, and then turn on the power switch.

 
</td></tr>
<tr><td></td><td></td><td colspan="2">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 4 times. The order of the LED flashes corresponds to the CPU (IC) on the respective P.C.B.s as shown below. If an IC is defective, the corresponding flash time is longer.

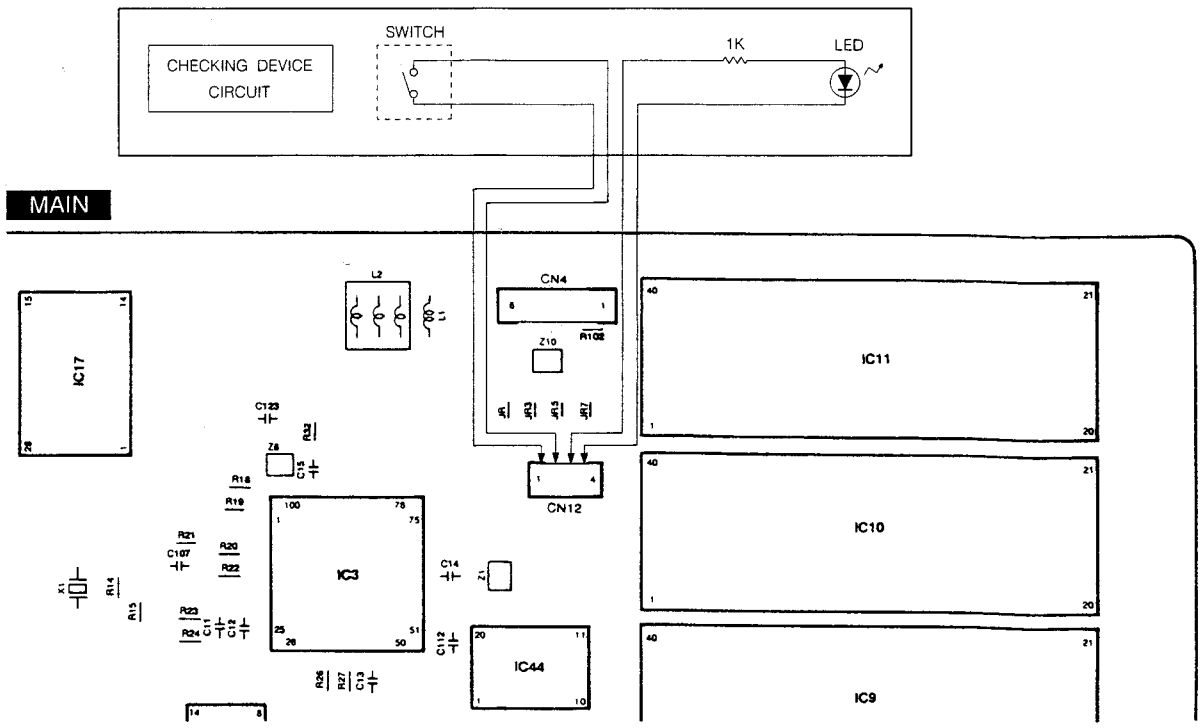
1. CPR (IC1), CPL (IC1) OK
2. CPR (IC1) defective
3. CPL (IC1) defective

NOTE : ● indicates short flash time
▬ indicates long flash time

 
</td></tr>
</table>

<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td rowspan="2">3</td><td rowspan="2">MAIN</td><td>Wave ROM check
MAIN: IC29-32</td><td>Press and hold the two E keys shown below, and then turn on the power switch.
 
</td></tr>
<tr><td>When set to the self-diagnostic mode, the Wave ROM outputs a sine wave. The Wave ROMs correspond to the keyboard keys as shown in the diagram to the right. When a key is pressed, the corresponding sine wave sound is produced. If no sound is produced, or if the sound is distorted, the Wave ROM corresponding to that key is defective.</td><td>• The key number indicates the Wave ROM number.
(I-①:IC29, I-②:IC30, II-①:IC31, II-②:IC32)
 
</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">CPL
CPR</td><td>Contral Panel LED check</td><td>Press and hold the two F keys shown below, and then turn on the power switch.
 
</td></tr>
<tr><td colspan="2">Press the buttons on the control panel and confirm that the corresponding LEDs light.</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">LCD</td><td>LCD check</td><td>Press and hold the two G keys shown below, and then turn on the power switch.
 
</td></tr>
<tr><td colspan="2">When set to the self-diagnostic mode, the test pattern is shown on the display. Monitor the display to confirm that the characters appear correctly.</td></tr>
</table>

■ Connection between serving CHECKING DEVICE and MAIN P.C.B.



MIDI IMPLEMENTATION CHART

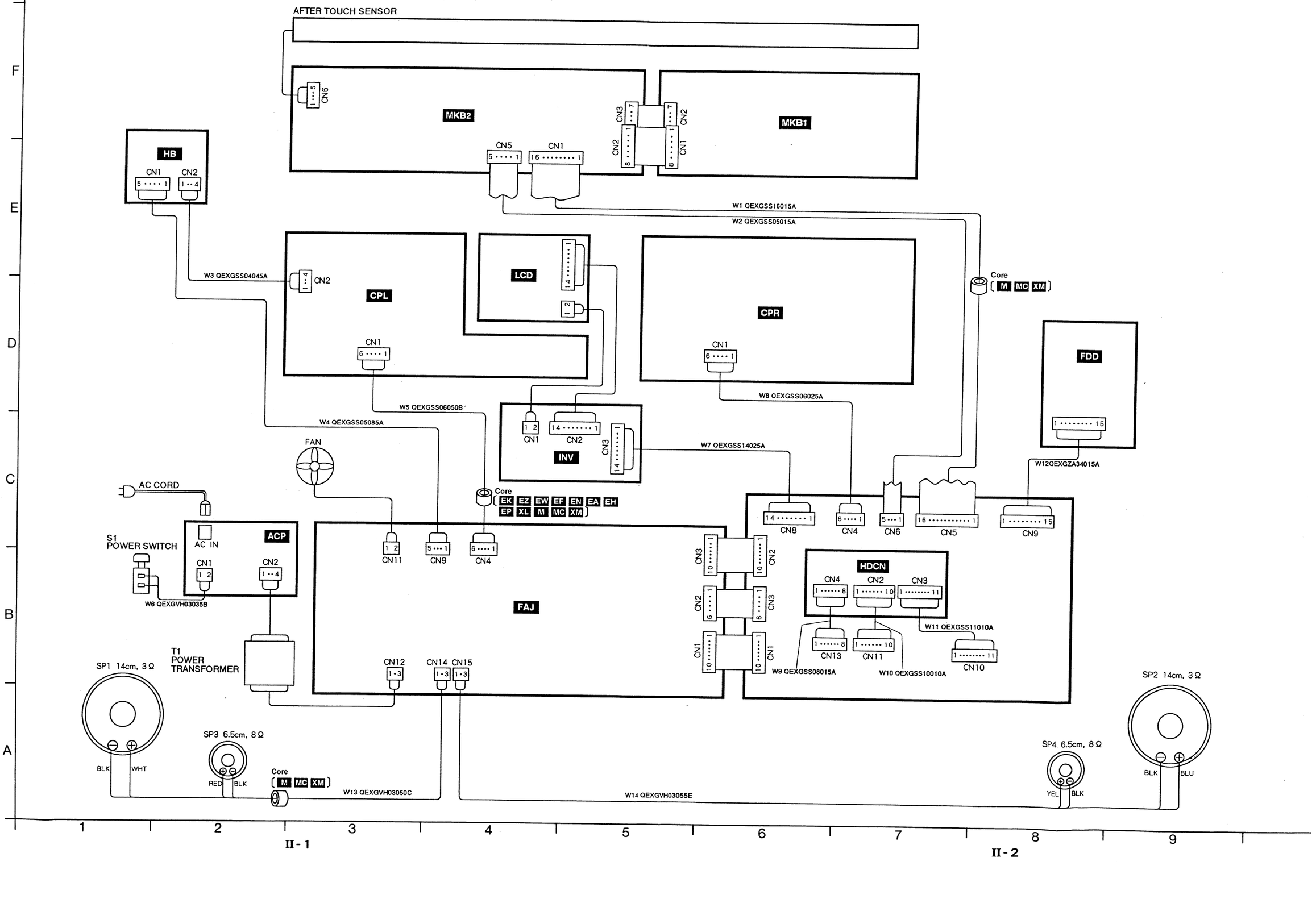
Keyboard [SX-KN3000] **(Transmitted)**

Function		RIGHT1,2,LEFT, PART4～15	PART16	ACMP1	ACMP2,3	BASS	DRUMS	CHORD	CONTROL	Remarks
Basic	Default	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	memorized
Channel	Changed	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	
	Default	3	3	3	3	3	3	3	3	OMNI OFF,POLY MODE
Mode	Messages	×	×	×	×	×	×	×	×	
	Altered	–	–	–	–	–	–	–	–	
Note		0-119	0-119	0-119	0-119	0-119	0-119	0-119	–	Changes depending on the position of the transpose control,octave shift,and drums type.
Number	True voice	–	–	–	–	–	–	–	–	
Velocity	Note ON	○	○	○	○	○	○	○	–	
	Note OFF	×	×	×	×	×	×	×	–	
After	Key's	×	×	×	×	×	×	×	–	
Touch	Ch's	○×*	×	×	×	×	×	×	–	
Pitch Bend		○×*	×	○×*	○×*	○×*	×	○×*	×	
Control Change	0,32	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	bank select MSB, LSB
	1	○×*	×	○×*	○×*	○×*	×	○×*	×	modulation
	6,38	○×*	×	×	×	×	×	×	×	data entry MSB, LSB
	7	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	volume
	10	○×*	×	○×*	○×*	○×*	×	×	×	panpot
	11	○×*	○×*	○×*	○×*	○×*	○×*	×	○×*	expression
	64	○×*	×	○×*	○×*	○×*	×	×	×	sustain
	80	×	×	○×*	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	○×*	×	×	intro, fill in, ending
	91	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	reverb
	93	○×*	○×*	×	×	×	×	×	×	DSP effect
	94	○×*	×	○×*	○×*	○×*	×	○×*	×	digital effect
	100,101	○×*	×	×	×	×	×	×	×	RPN LSB, MSB
	120	○	○	×	×	×	×	×	×	all sound off
	121	○×*	○×*	×	×	×	×	×	×	reset all cotrollers
Prog Change		○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	Changes depending on program change mode and prog.cng to p.mem.
	True #	–	–	–	–	–	–	–	–	
System exclusive		○								
System common	Song Pos	○×*								
	Song Sel	○×* (0-19)								
	Tune	×								
System Real Time	Clock	○								
	Commands	○×*								start/stop,continue
Aux Messages	Local ON/ OFF	×	×	×	×	×	×	×	–	
	All notes OFF	×	×	×	×	×	×	×	–	
	Active Sense	○								
	Reset	×								
Notes		○×*……Whether or not the data for each of these items is transmitted can be set.								

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO ○:Yes

Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO ×:No

WIRING CONNECTION Diagram



II-1 II-2

Keyboard [SX-KN3000] **(Recognized)**

Function		RIGHT1,2,LEFT, PART4～15	PART16	ACMP1	ACMP2,3	BASS	DRUMS	CHORD	CONTROL	Remarks
Basic Channel	Default	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	memorized
	Changed	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	
Mode	Default	3	3	3	3	3	3	3	3	OMNI OFF,POLY MODE
	Messages	×	×	×	×	×	×	×	×	
	Altered	–	–	–	–	–	–	–	–	
Note Number		0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	Changes depending on the position of the transpose control,octave shift, and drums type.
	True voice	0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	
Velocity	Note ON	○	○	○	○	○	○	○	–	
	Note OFF	×	×	×	×	×	×	×	–	
After Touch	Key's	×	×	×	×	×	×	×	–	
	Ch's	○×*	×	×	×	×	×	×	–	
Pitch Bend		○×*	×	○×*	○×*	○×*	×	○×*	×	
Control Change	0,32	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	bank select MSB, LSB
	1	○×*	×	○×*	○×*	○×*	×	○×*	×	modulation
	6,38	○×*	×	×	×	×	×	×	×	data entry MSB, LSB
	7	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	volume
	10	○×*	×	○×*	○×*	○×*	×	×	×	panpot
	11	○×*	○×*	○×*	○×*	○×*	○×*	×	○×*	expression
	64	○×*	×	○×*	○×*	○×*	×	×	×	sustain
	80	×	×	○×*	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	○×*	×	×	intro, fill in, ending
	91	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	reverb
	93	○×*	○×*	×	×	×	×	×	×	DSP effect
	94	○×*	×	○×*	○×*	○×*	×	○×*	×	digital effect
	100,101	○×*	×	×	×	×	×	×	×	RPN LSB, MSB
	120	○	○	○	○	○	○	○	×	all sound off
	121	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	reset all cotrollers
Prog Change		○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	Changes depending on program change mode and prog.cng to p.mem.
	True #	0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	
System exclusive		○								
System common	Song Pos	○×*								
	Song Sel	○×* (0-19)								
	Tune	×								
System Real Time	Clock	○								
	Commands	○×*								start/stop,continue
Aux Messages	Local ON/ OFF	×	×	×	×	×	×	×	–	
	All notes OFF	○	○	○	○	○	○	○	–	
	Active Sense	○								
	Reset	×								
Notes		○×*……Whether or not the data for each of these items is received can be set.								

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO ○:Yes

Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO ×:No

PRECAUTIONS BEFORE SERVICING

■ Precautions for measuring of the output waveforms.

1. The waveform was measured with a "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may differ somewhat due to the difference in the timing of triggering.
2. Since the 1/10 test probe is used, the indicated voltage value on the bottom part of each waveform photo is 1/10 of the actual value (e.g. 0.2 V/cm should be 2.0 V/cm).
3. To measure the waveforms, first set this unit to the self-diagnostic mode (refer to page I-14, No. 3). The Wave ROM output will then be output as a sine wave to facilitate the servicing check.

■ Important safety notice:

Components identified by a ⚠ mark have special characteristics impotant for safety.
When replacing any of these components, use only manufacture's specified parts.

■ Symbolic Marks

The symbolic marks for resistors and capacitors which used in this circuits are classified as following TABLE-1 and TABLE-2.

1. RESISTORS
   - Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
   - All resistors are 1/4 WATT, ±5 % TOLERANCE unless otherwise designated in schematic diagrams.

(TABLE-1)

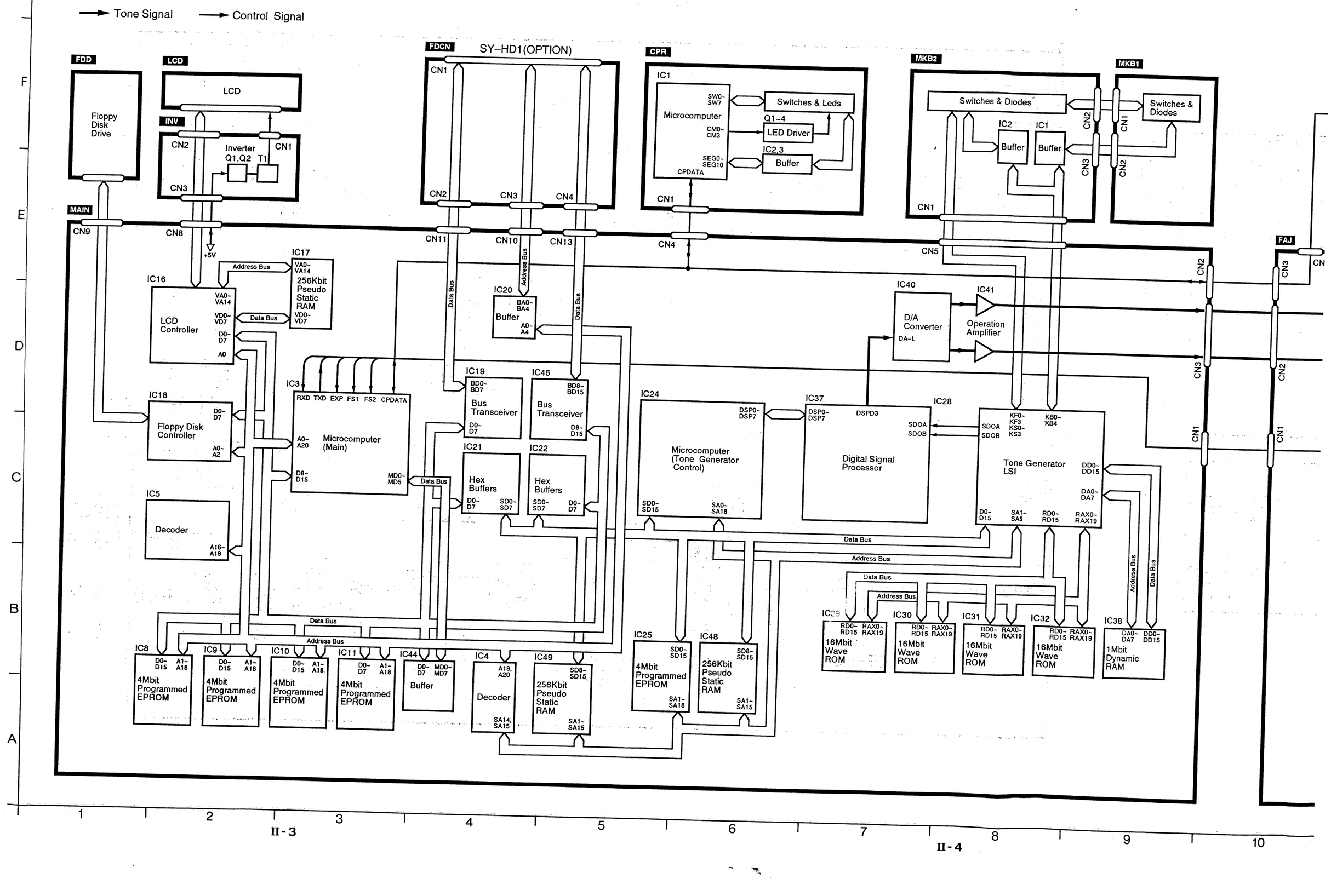
SYMBOL	SPECIFICATION	SYMBOL	SPECIFICATION
Ⓕ	Fixed Carbon Film Resistors "FLAME-PROOF" (ERD—F—type)	Ⓕ	Fixed Metal Film Resistors "FLAME-PROOF" (ERX—type)
Ⓕ	Fixed Wire Wound Resistors "FLAME-PROOF" (ERF—type)	[F]	Fuse Type Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERQ—type)
Ⓕ	Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERG—type)	[F]	Fuse Type Fixed Carbon File Resistors "FLAME-PROOF" (ERD2FC—type)
Ⓖ	Fixed Metal Film Resistors (Precision and High Stability) (ERO—type)		

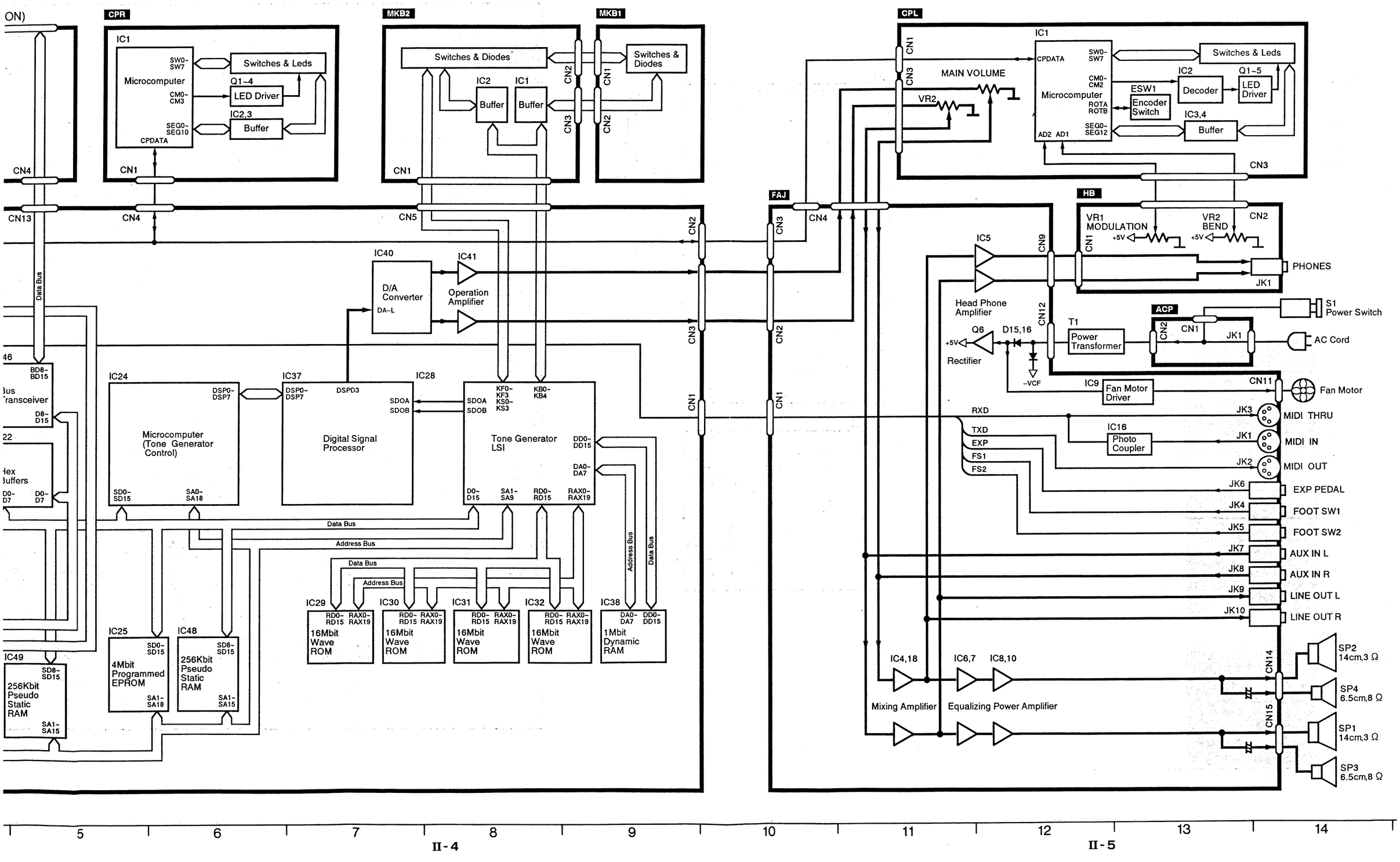
2. CAPACITORS
   - Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type, ±10 % Tolerance)
   - Polarized capacitors without symbolic mark are Aluminum Electrolytic Capapcitors. (ECEA-type, ±20 % Tolerance)

(TABLE-2)

SYMBOL	SPECIFICATION	TYPE
Ⓝ	Non-Polarized Electrolytic Capacitors	ECEA_KN_type
Ⓨ	Non-Polarized Electrolytic (for Network system)	ECEA_Y_type
Ⓣ	Tantalum Solid Electrolytic Capacitors	ECS_type
TF	Metalized Plastic Film Capacitors (TF Series)	ECQV_type
○	Temperature Compensating Ceramic Capacitors	ECC_type
	High-Dielectric Constant Ceramic Capacitors	ECK_type ECR_type
	Axial Lead Ceramic Capacitors	ECB_type
	Metalized Polyester Film Capacitors for Across the Line	ECQ_EW_type
	Aluminum Electrolytic Capacitors for Smoothing Circuit	ECES_type
	Multilayer Ceramic Chip Capacitors	ECUV_type

BLOCK Diagram




ON)
CPR
IC1
Microcomputer
SW0~ SW7
CM0~ CM3
SEG0~ SEG10
CPDATA
Switches & Leds
Q1~4
LED Driver
IC2,3
Buffer
CN1
CN4
MKB2
Switches & Diodes
IC2
IC1
Buffer
Buffer
CN2
CN3
CN1
MKB1
Switches & Diodes
CPL
IC1
CPDATA
SW0~ SW7
CM0~ CM2
ROTA ROTB
AD2 AD1
SEG0~ SEG12
Microcomputer
Switches & Leds
IC2
Decoder
Q1~5
LED Driver
ESW1
Encoder Switch
IC3,4
Buffer
MAIN VOLUME
VR2
CN1
CN3
CN13
CN4
CN5
Data Bus
FAJ
CN3
CN4
CN2
CN1
HB
VR1 MODULATION
VR2 BEND
+5V
CN1
CN2
PHONES
JK1
IC5
CN9
Head Phone Amplifier
CN12
ACP
S1 Power Switch
T1
Power Transformer
CN2
CN1
JK1
AC Cord
Q6
D15,16
+5V
Rectifier
-VCF
IC9
Fan Motor Driver
CN11
Fan Motor
RXD
TXD
EXP
FS1
FS2
IC16
Photo Coupler
JK3
MIDI THRU
JK1
MIDI IN
JK2
MIDI OUT
JK6
EXP PEDAL
JK4
FOOT SW1
JK5
FOOT SW2
JK7
AUX IN L
JK8
AUX IN R
JK9
LINE OUT L
JK10
LINE OUT R
IC4,18
IC6,7
IC8,10
Mixing Amplifier
Equalizing Power Amplifier
CN14
CN15
SP2 14cm,3 Ω
SP4 6.5cm,8 Ω
SP1 14cm,3 Ω
SP3 6.5cm,8 Ω
IC40
D/A Converter
DA-L
IC41
Operation Amplifier
IC24
Microcomputer (Tone Generator Control)
DSP0~ DSP7
SD0~ SD15
SA0~ SA18
IC37
DSP0~ DSP7
DSPD3
Digital Signal Processor
IC28
SDOA
SDOB
KF0~ KF3
KS0~ KS3
KB0~ KB4
Tone Generator LSI
DD0~ DD15
DA0~ DA7
D0~ D15
SA1~ SA9
RD0~ RD15
RAX0~ RAX19
Data Bus
Address Bus
IC29
IC30
IC31
IC32
16Mbit Wave ROM
IC38
1Mbit Dynamic RAM
DA0~ DA7
DD0~ DD15
IC25
4Mbit Programmed EPROM
IC48
256Kbit Pseudo Static RAM
IC49
256Kbit Pseudo Static RAM
BD8~ BD15
D8~ D15
D0~ D7
Bus Transceiver
Hex Buffers
5
6
7
8
9
10
11
12
13
14

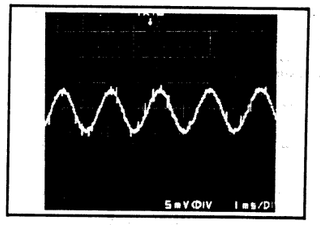
FAJ/ACP/HB P.C. Diagram

■Measuring Conditions

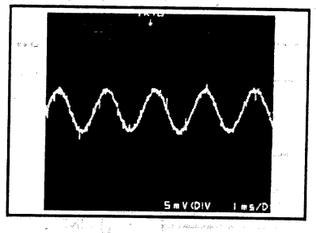
Set to the self-diagnostic mode followings.

- While pressing E4 and E5 keys simultaneously, turn on the power switch.
- SOUND GROUP... SYNTH LEAD
  (SINE WAVE & ROM CHECK 16dB DOWN)
- KEY..... C4
- MAIN VOLUME..... MAX

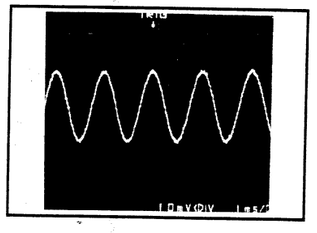
5, 6

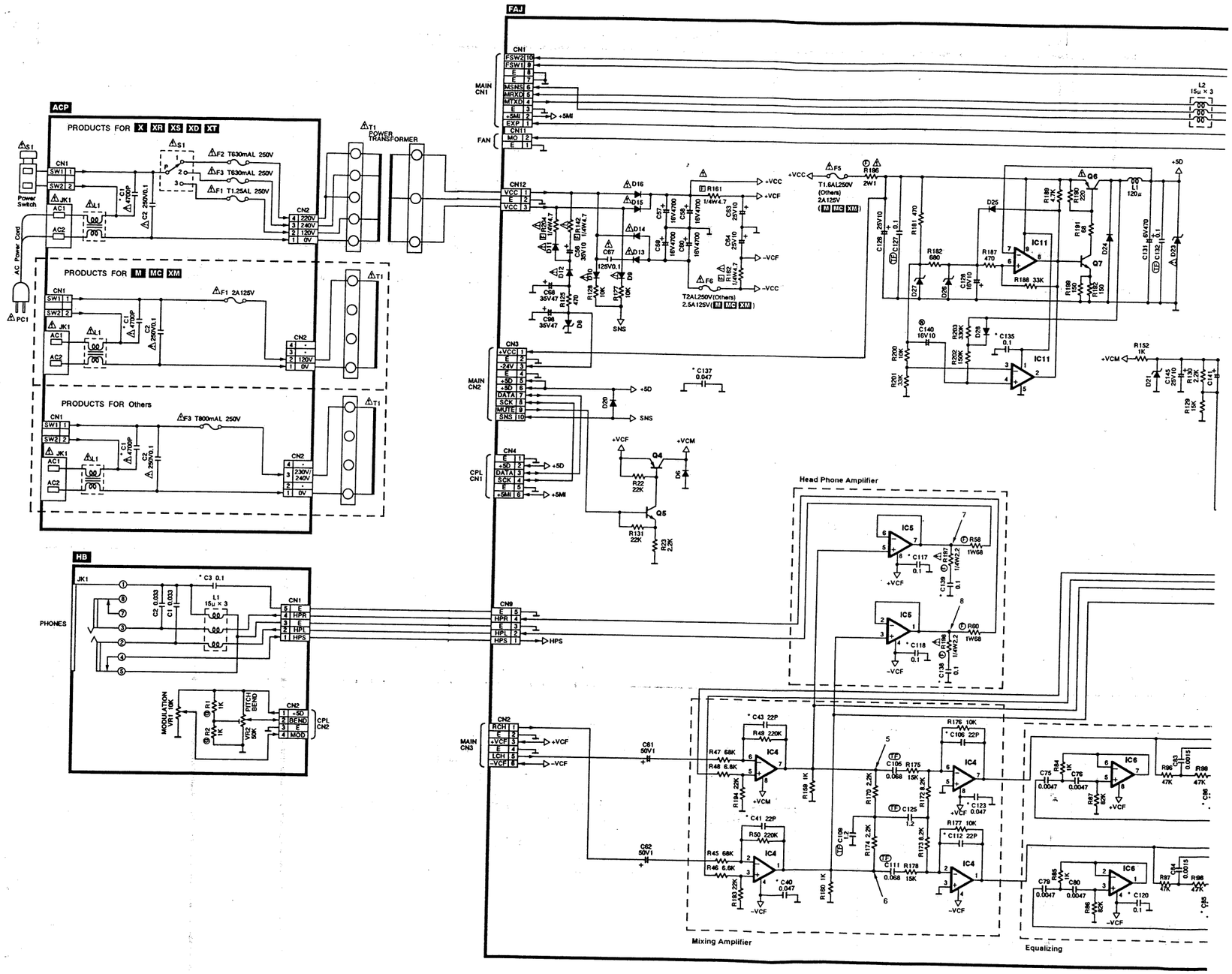


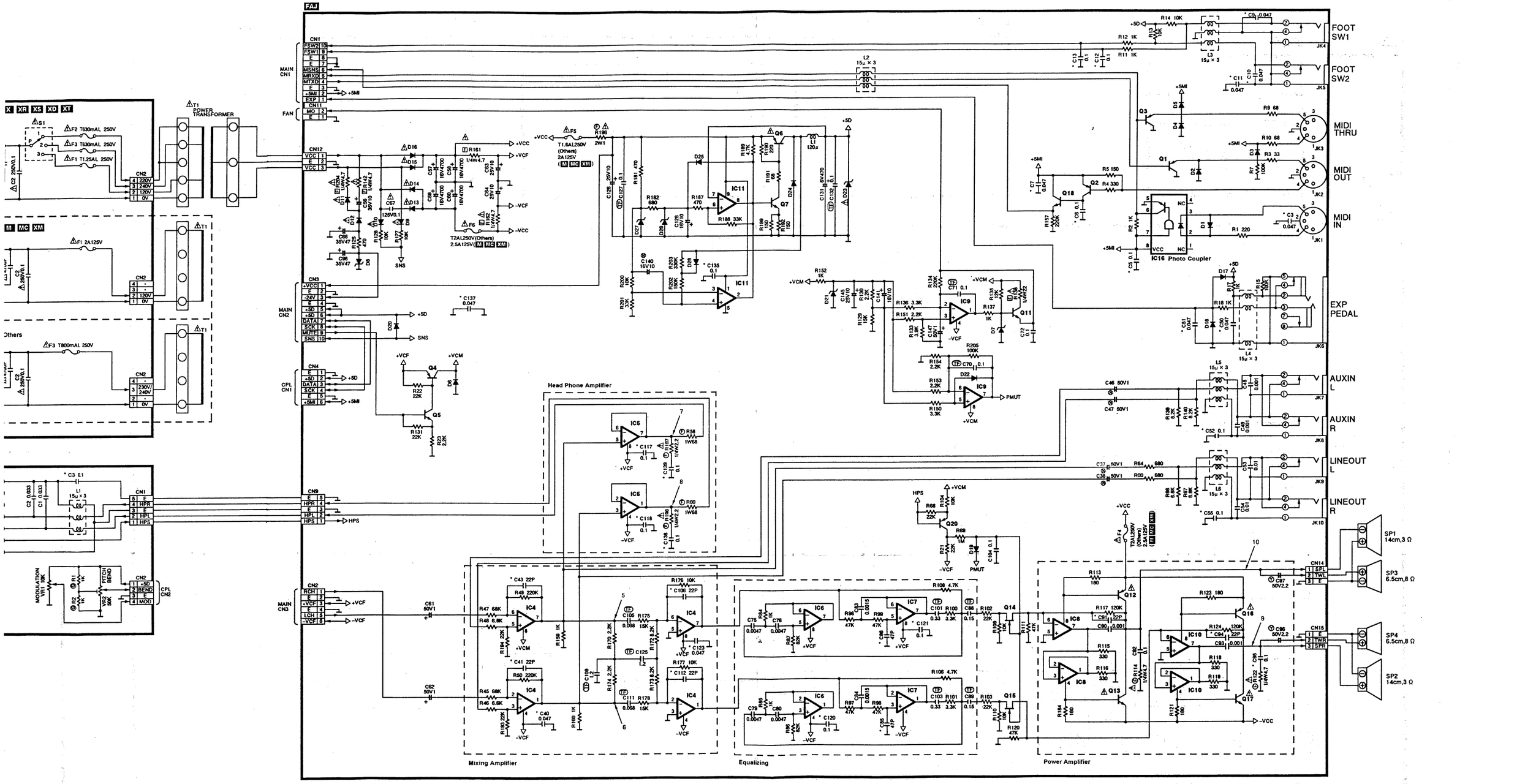
7, 8



9, 10

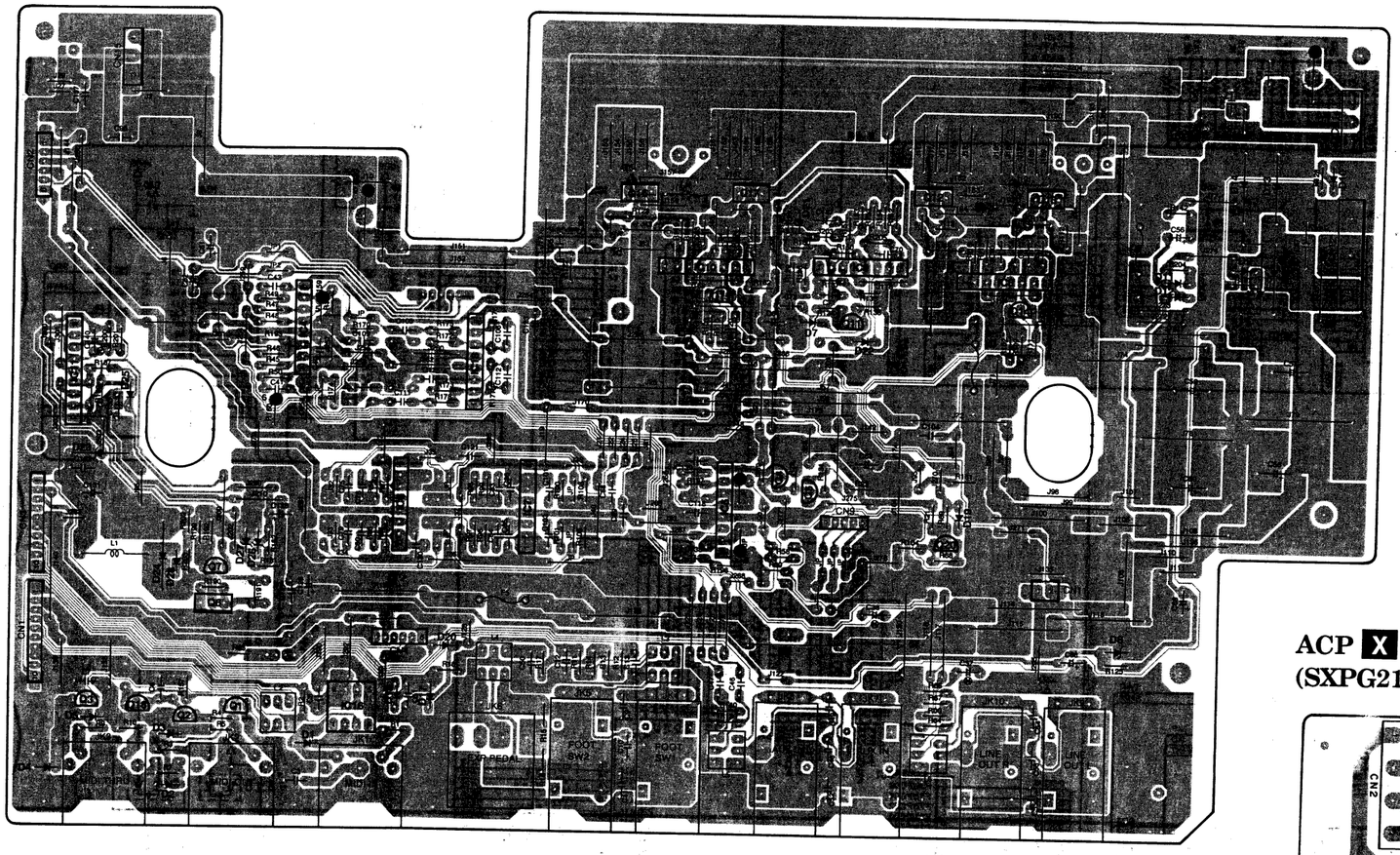





FAN
MAIN CN1
FAN
POWER TRANSFORMER
T1
S1
F2 T630mAL 250V
F3 T630mAL 250V
F1 T1.25AL 250V
CN2
220V
240V
120V
0V
M MC MX
F1 2A125V
Others
F3 T800mAL 250V
230V
240V
CN1
F
HPR
HPL
HPS
L1
15μ × 3
MODULATION
VR1 10K
PITCH BEND
VR2 10K
SD
BEND
MOD
CPL CN2
CN12
VCC
VCF
-VCF
-VCC
SNS
T2AL250V(Others)
2.5A125V(M MC MX)
F5
T1.6AL250V
(Others)
2A125V
(M MC MX)
R186 2W1
L2
15μ × 3
L3
15μ × 3
L4
15μ × 3
L5
15μ × 3
CN3
MAIN CN2
CN4
CPL CN1
+5D
+5MI
+VCF
+VCM
-24V
DATA
SCK
MUTE
CN9
HPS
CN2
MAIN CN3
RCH
LCH
C61 50V1
C62 50V1
Head Phone Amplifier
IC5
IC11
IC4
IC9
IC6
IC7
IC8
IC10
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q20
IC16 Photo Coupler
FOOT SW1
FOOT SW2
MIDI THRU
MIDI OUT
MIDI IN
EXP PEDAL
AUXIN L
AUXIN R
LINEOUT L
LINEOUT R
JK4
JK5
JK3
JK2
JK1
JK6
JK7
JK8
JK9
JK10
CN14
CN15
SP1 14cm,3 Ω
SP3 6.5cm,8 Ω
SP4 6.5cm,8 Ω
SP2 14cm,3 Ω
PMUT
Mixing Amplifier
Equalizing
Power Amplifier

FAJ/ACP/ MAIN/ HDCN P.C. Board

M MC XM (SXPG222431A)
FAJ **Others** (SXPG222411A)



FAJ
NOTES:

- IC'S

IC4:	M5218AL
IC5:	SVIGM5216LL
IC6～10:	M5218AL
IC11:	AN6913
IC16:	QCPL-260L
IC18:	M5218AL

- TRANSISTORS

Q1～3:	2SA1015-GR
Q4:	2SA1534AR
Q5:	2SC1815GR
Q6:	2SA1643
Q7:	2SC1815GR
Q11:	2SC3940ARS
Q12:	2SA1643
Q13:	2SC4327
Q14, 15:	2SCK381CD
Q16:	2SA1643
Q17:	2SC4327
Q18:	2SC1815GR
Q20:	2SA1015-GR

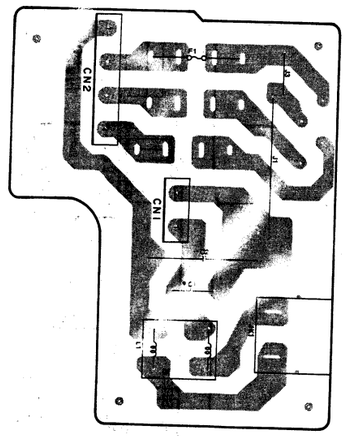
- DIODES

D1～5:	MA165
D6:	EK04
D7:	MA4082
D8:	MA4220M
D9～12:	SVDGERA1502
D13～16:	SVDS3V20
D17～20:	MA165
D21:	MA4051
D22:	MA165
D23:	MA2062LF
D24:	RK34LF
D25:	MA165
D26:	MA4051
D27:	MA4082
D28:	MA165

- FUSES

F4, 6 Others:	XBA2C20TB0
F4, 6:	XBA1C25NU100
	M MC XM
F5 Others:	XBA2C16TB0
F5:	XBA1C20NU100
	M MC XM

ACP X MC XM
(SXPG216431A)

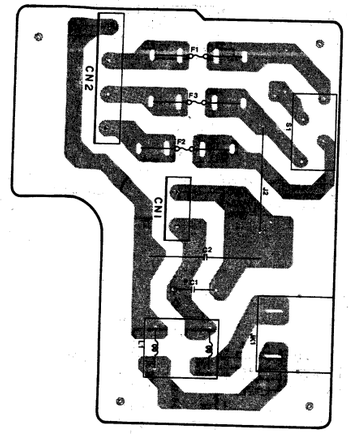


ACP
NOTE:

- FUSE

F1:	XBA1C20NU100

ACP X XR XS XD XT
(SXPG216441A)

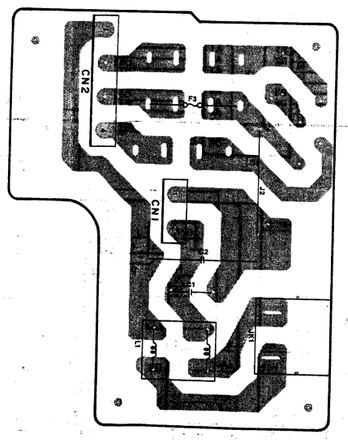


ACP
NOTE:

- FUSES

F1:	XBA2C12TB0
F2, 3:	XBA2C06TB0

ACP Others
(SXPG216451A)

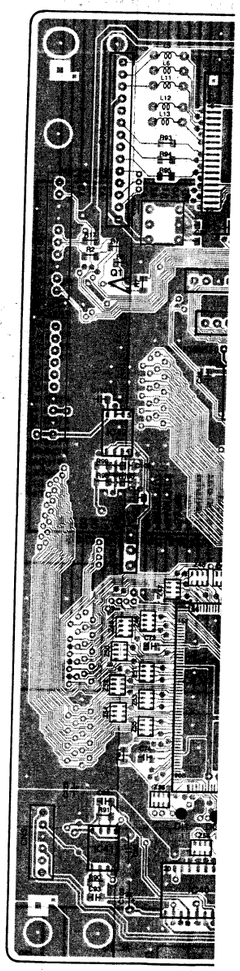


ACP
NOTE:

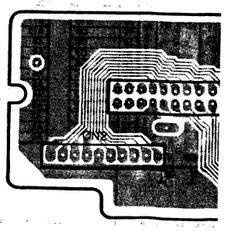
- FUSE

F3:	XBA2C08TB0

M XM (S
MAIN **Other** (S

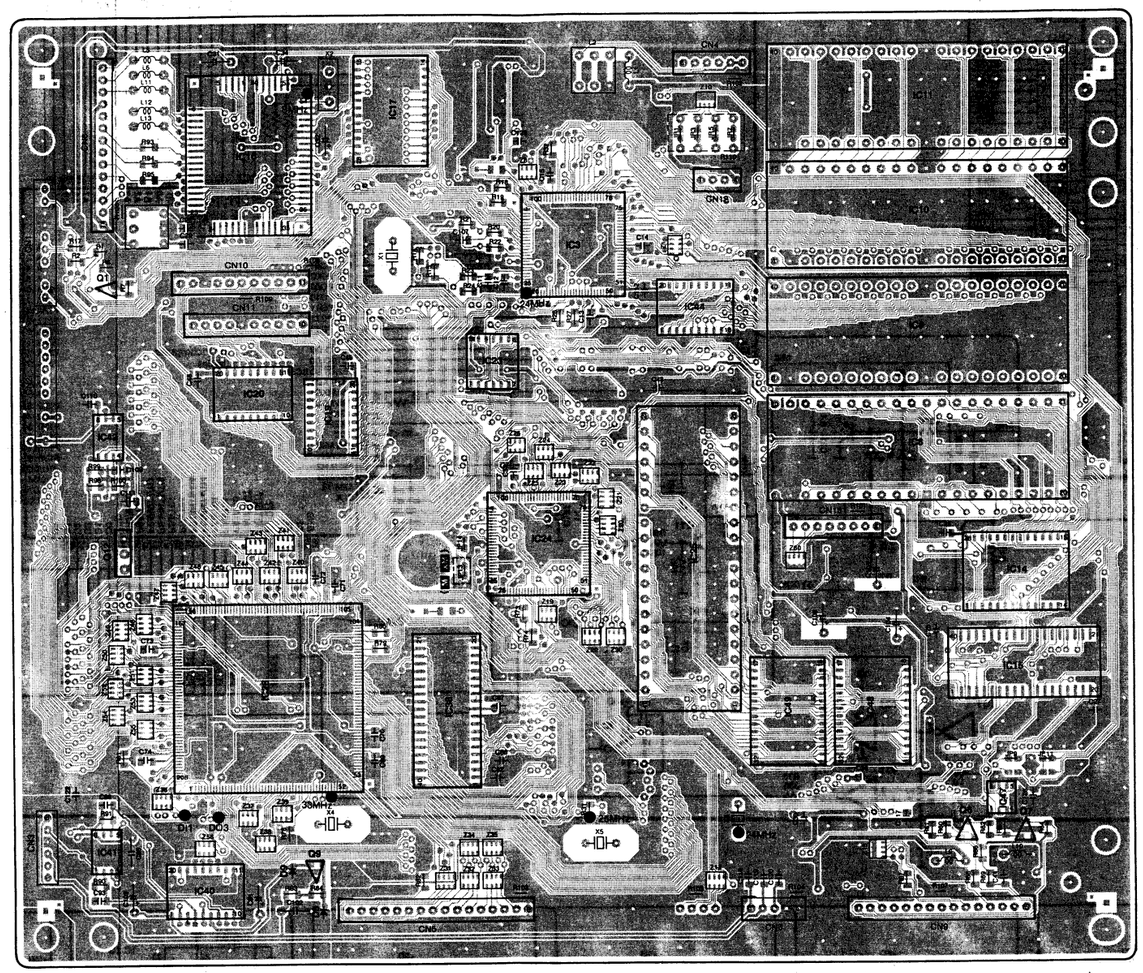


HDCN (SXPG222

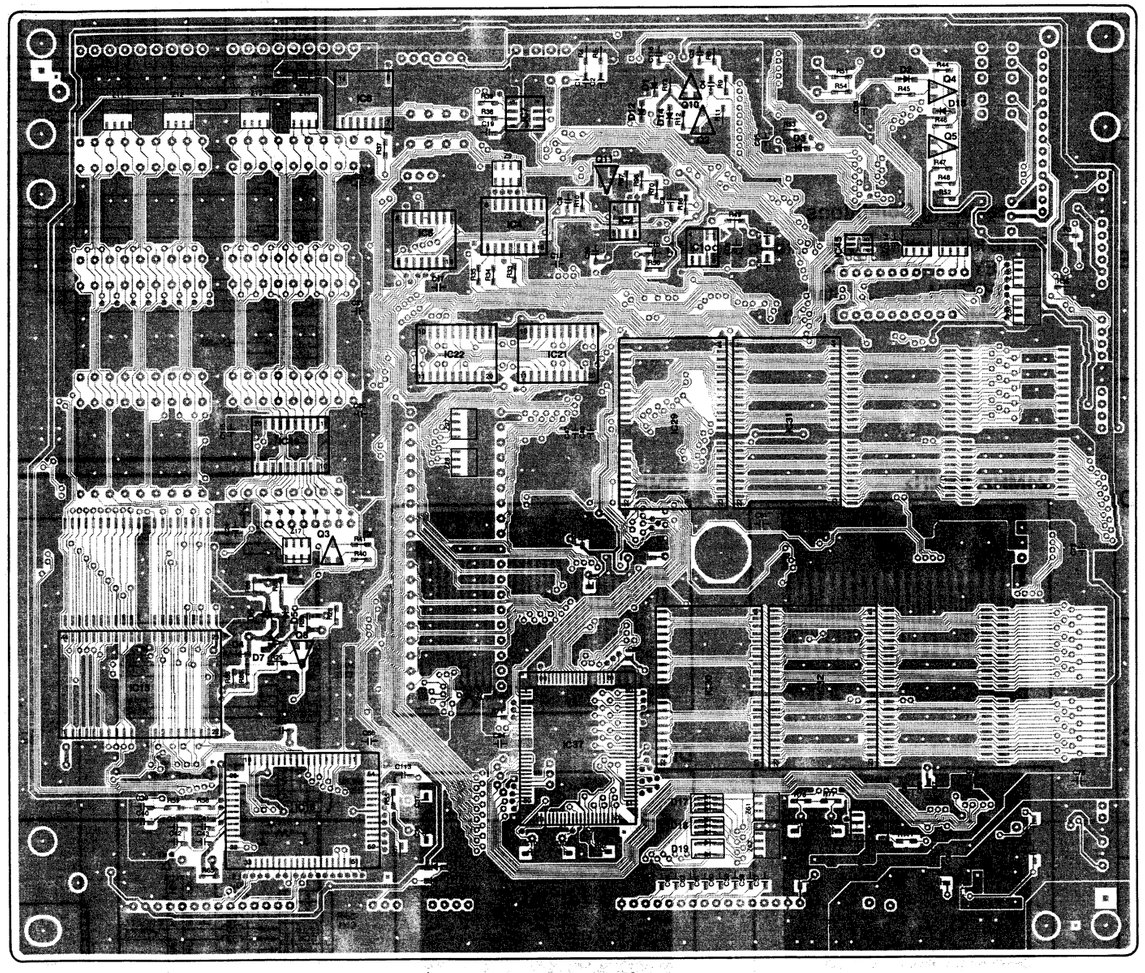


M XM (SXPG222321)

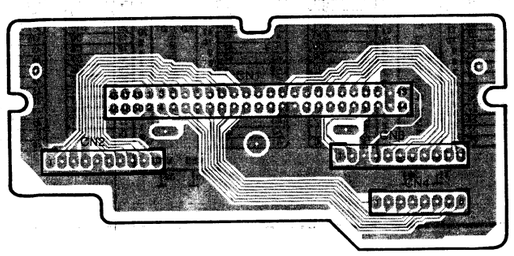
MAIN Other (SXPG222311) (COMPONENT SIDE)



MAIN (FOIL SIDE)



HDCN (SXPG222411B)



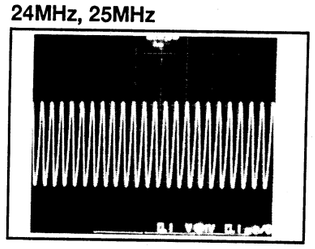
MAIN (A)/ HDCN P.C. Diagram

■ Measuring Conditions

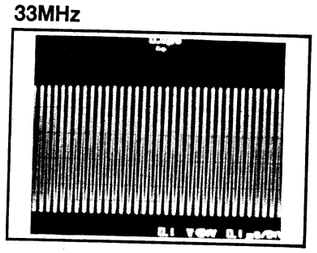
Set the initial setting mode (Refer to page I-3)

- KEYBOARD..... C4
- RHYTHM..... Start
- TEMPO..... ♩ =120

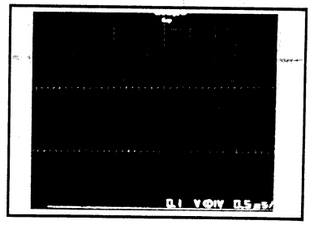
24MHz, 25MHz



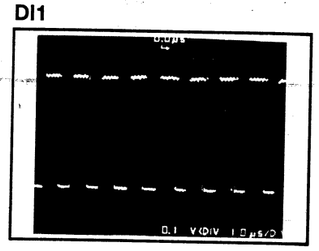
33MHz



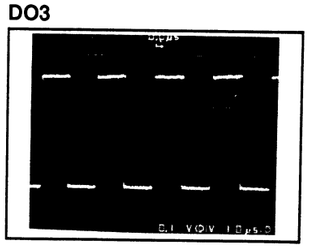
8MHz

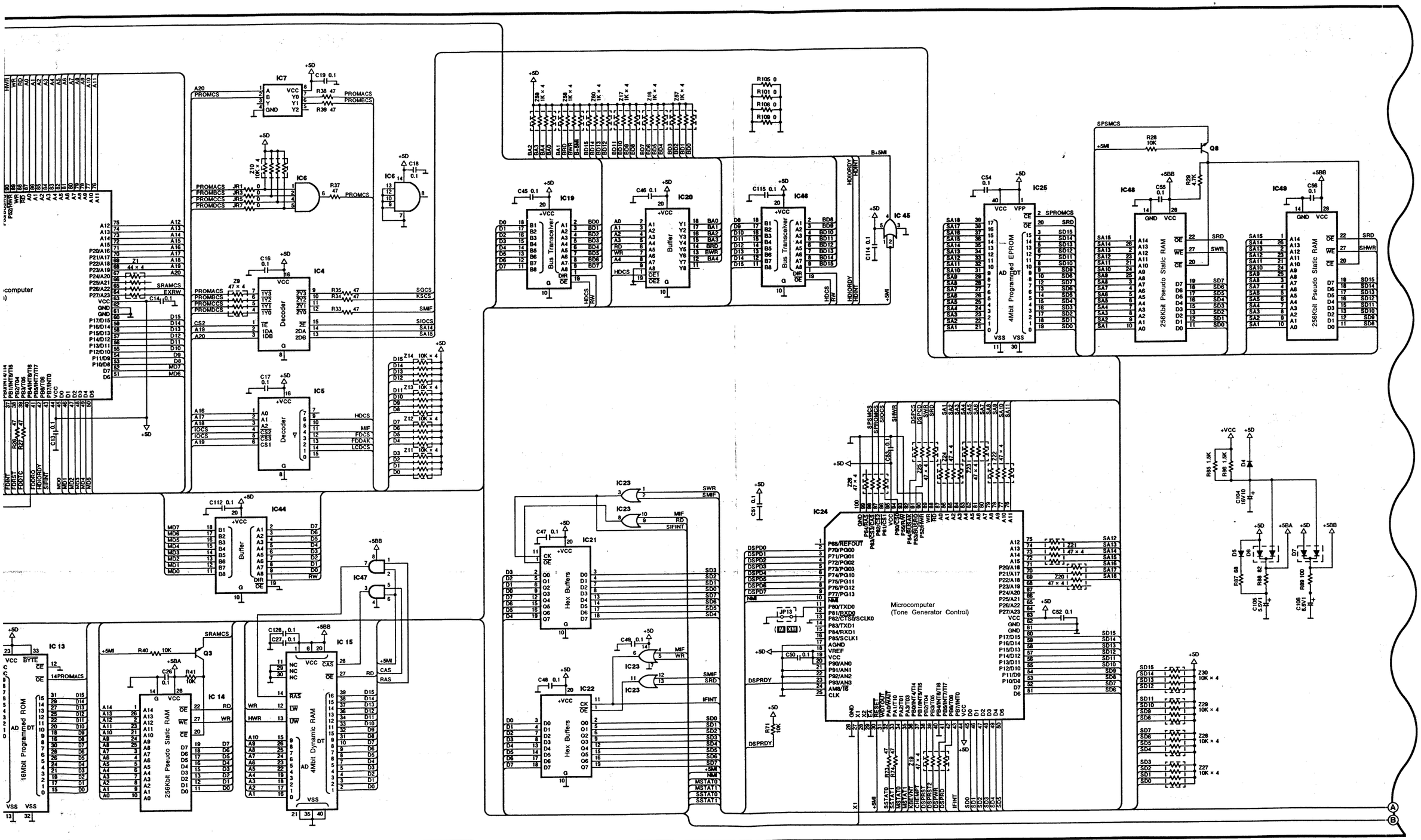


DI1

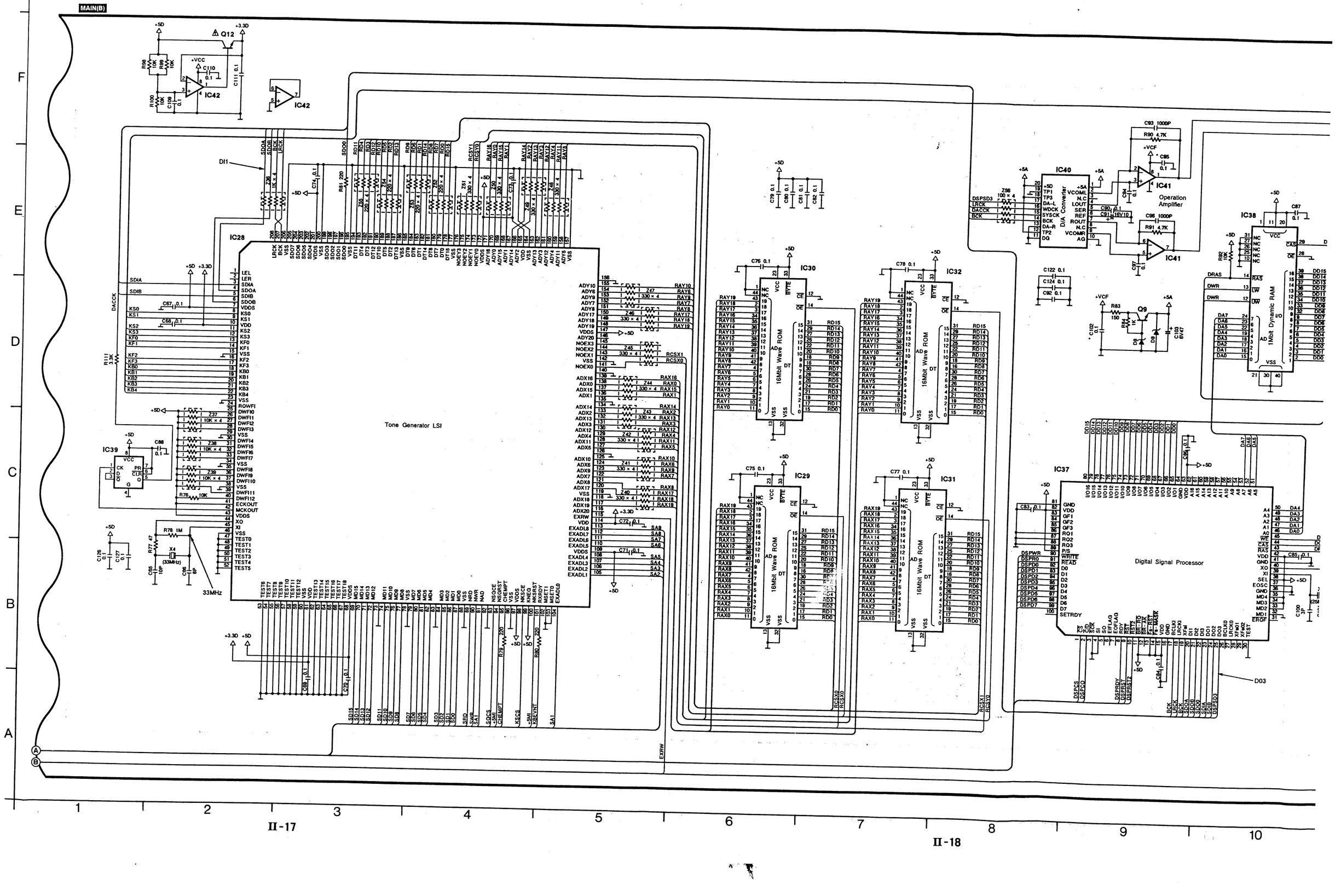


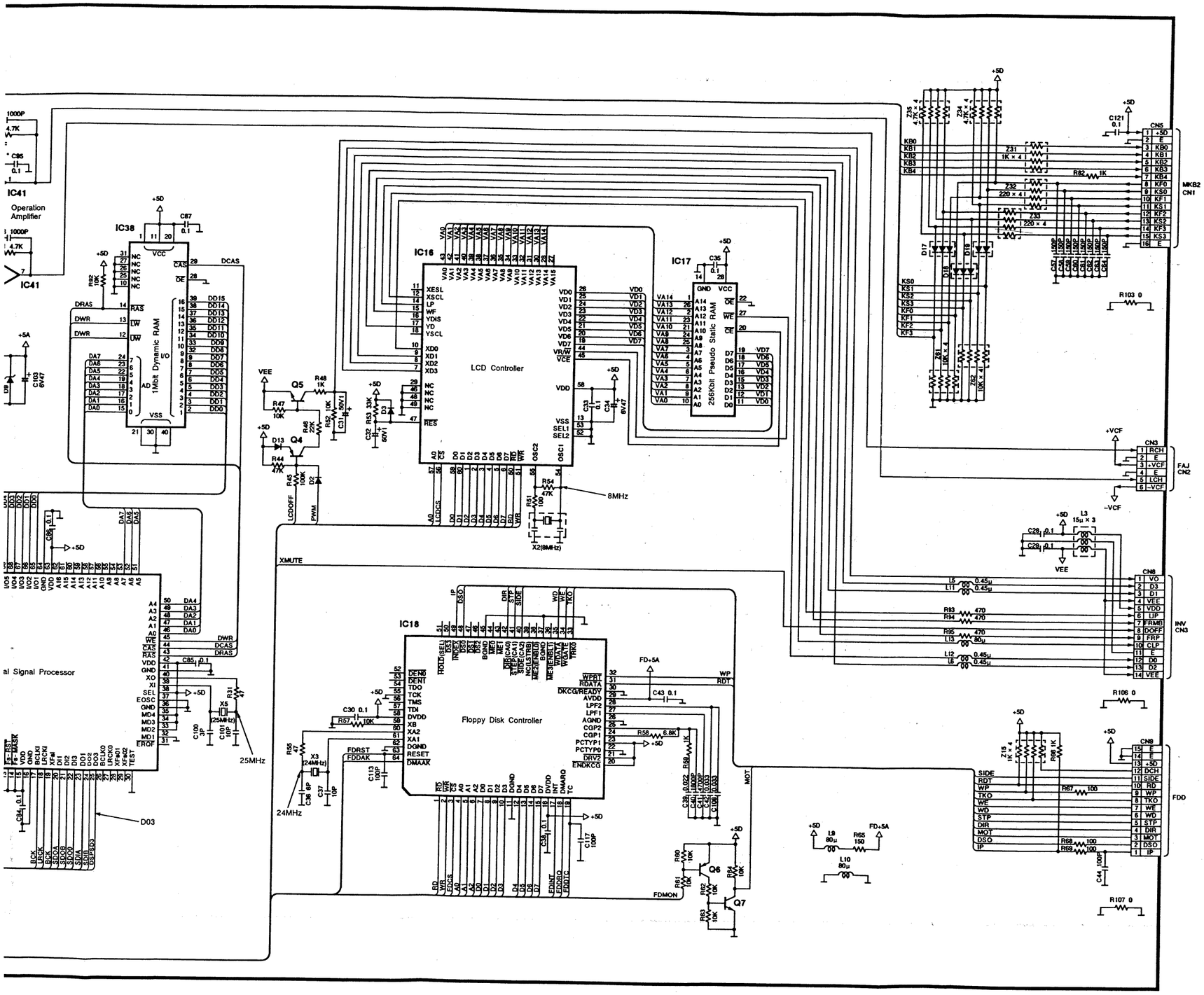
DO3




IC7
IC6
IC4
IC5
IC44
IC47
IC13
IC14
IC15
IC19
IC20
IC46
IC45
IC25
IC48
IC49
IC23
IC22
IC21
IC24
Microcomputer
(Tone Generator Control)
16Mbit Programmed ROM
256Kbit Pseudo Static RAM
4Mbit Dynamic RAM
4Mbit Programmed EPROM
Bus Transceiver
Buffer
Hex Buffers
Decoder
SRAMCS
EXRW
SGCS
KSCS
SMIF
SIOCS
HDCS
MIF
FDCS
FDDAK
LCDCS
SPSMCS
SPROMCS
SRD
SWR
SHWR
SMWR
SMRD
SIFINT
IFINT
B+SMI
+SMI
+5BA
+5BB
+VCC
+5D

MAIN (B) P.C. Diagram





MAIN

NOTES:

- IC'S

IC1:	T7WU04F
IC2:	TC7W14F
IC3:	TMP95C061AF
IC4:	D74HC139GS
IC5:	D74HC138GS
IC6:	D74HC21GS
IC7:	T7W139F
IC8:	QSIGCKN30AX
IC8-1:	(M27C400210F1)
IC9:	QSIGCKN30BX
IC9-1:	(M27C400210F1)
IC10:	QSIGCKN30CX
IC10-1:	(M27C400210F1)
IC11:	QSIGCKN30DX
IC11-1:	(M27C400210F1)
IC13:	QSIGT3C16060
IC14:	M5256CFP70LL
IC15:	M5M44170AJ8S
IC16:	SED1330FBA
IC17:	TC51832AFL85
IC18:	D72070GF3BE
IC19:	D74HC245GS
IC20:	D74HC541GS
IC21, 22:	D74HC374GS
IC23:	D74HC32GS
IC24:	TMP95C061AF
IC25:	QSIGCKN30EX
IC25-1:	(M27C400210F1)
IC28:	TC183C230002
IC29:	QSIGH3C16DS6
IC30:	QSIGH3C16DS7
IC31:	QSIGH3C16DS8
IC32:	QSIGH3C16DS9
IC37:	D6383GF-3BA
IC38:	LC321664AJ80
IC39:	TC7W74F
IC40:	PCM69AU
IC41:	M5218AFP
IC42:	M5223FP
IC44:	D74HC245GS
IC45:	TC7S32F
IC46:	D74HC245GS
IC47:	TC7W08F
IC48, 49:	M5256CFP70LL

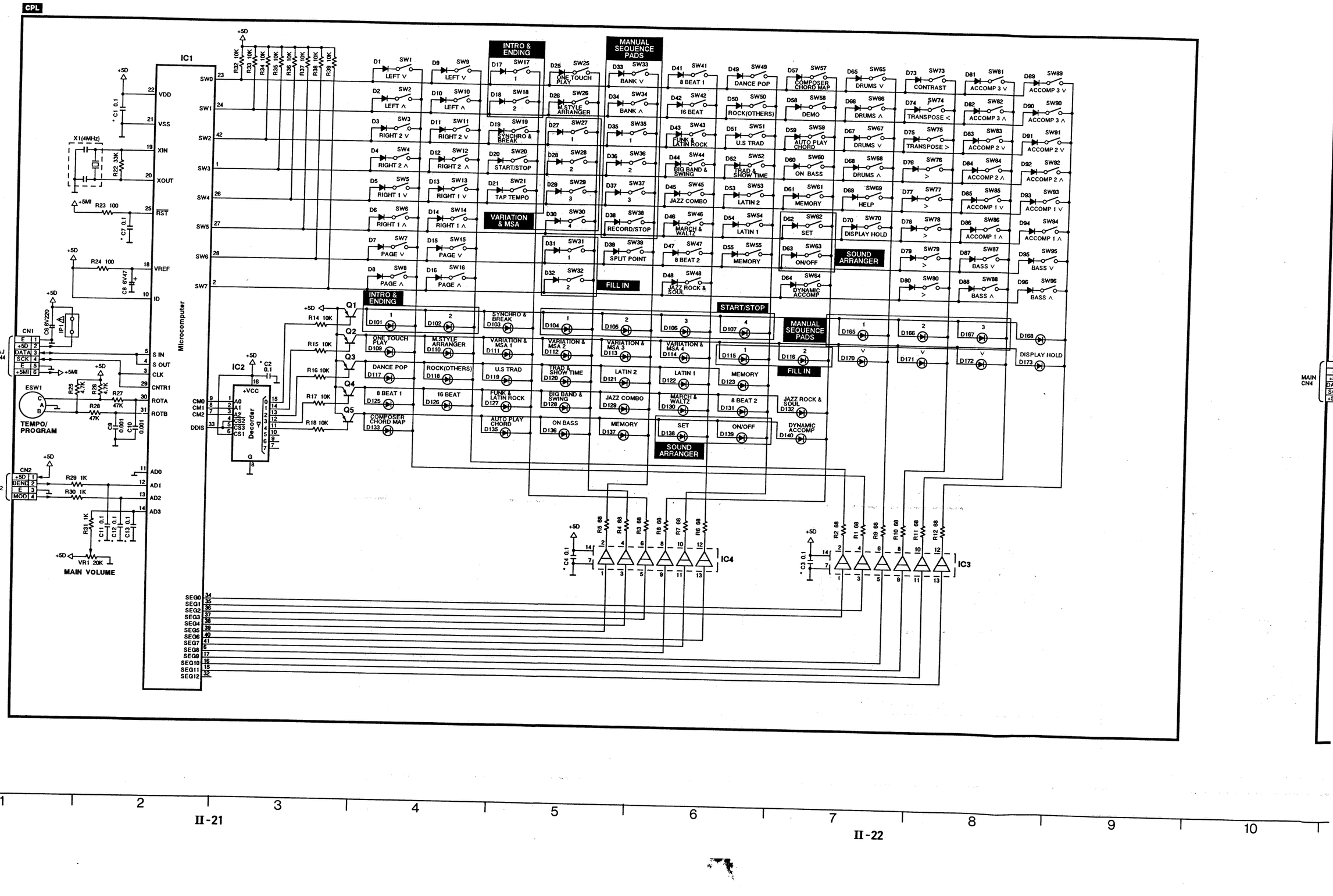
- TRANSISTORS

Q1, 2:	2SB709AR
Q3:	2SD601AQ
Q4:	2SB709AR
Q5:	2SD601AQ
Q6:	2SB709AR
Q7~9:	2SD601AQ
Q10:	2SB709AR
Q11:	2SD601AQ
Q12:	2SC4327

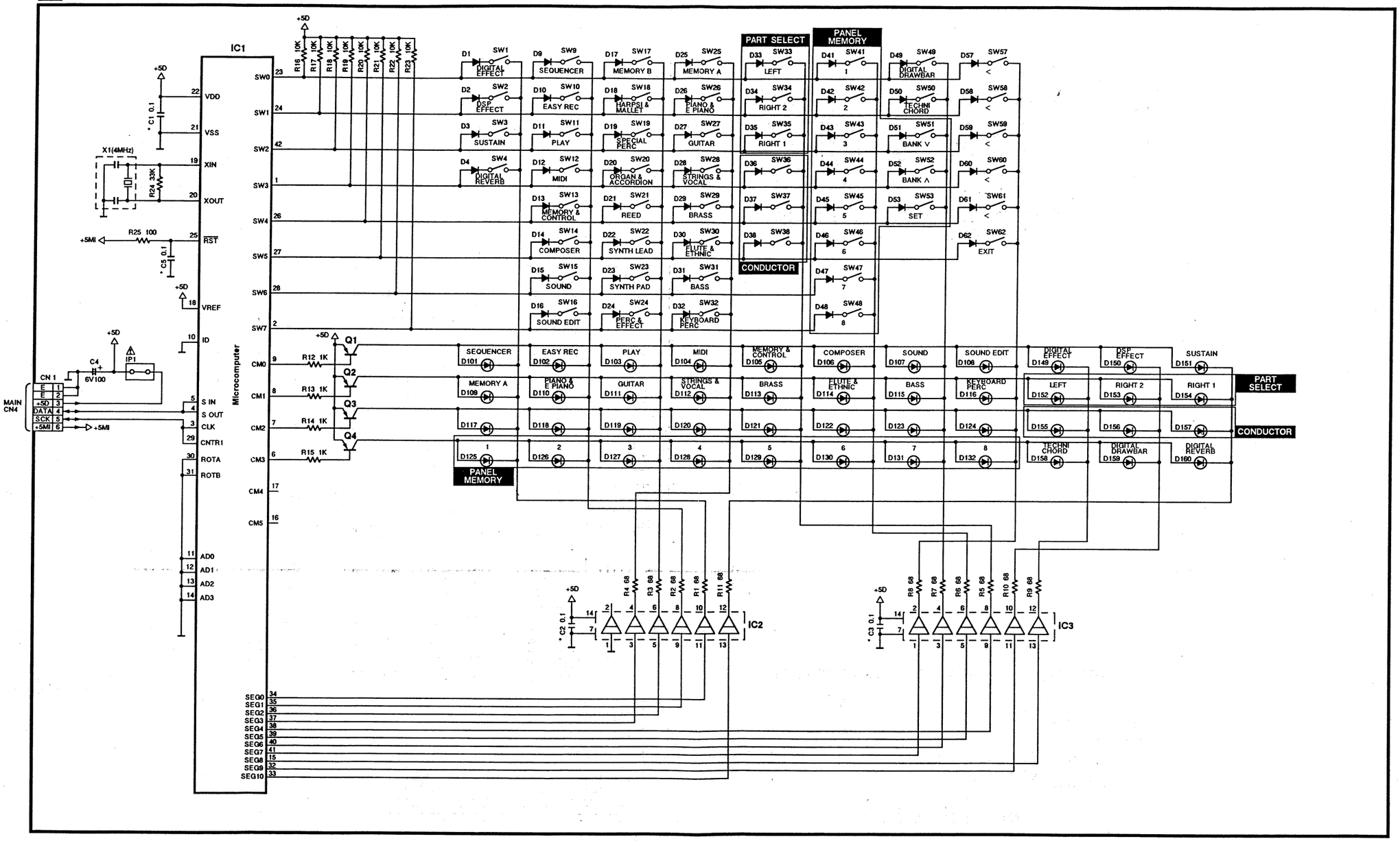
- DIODES

D1~5:	MA110
D6, 7:	MA151WK
D8:	MA8056
D9:	MA8062M
D12, 13:	MA110
D14:	MA8030L
D15, 16:	MA110
D17, 18:	MA121
D19:	MA159A

CPL/CPR P.C. Diagram

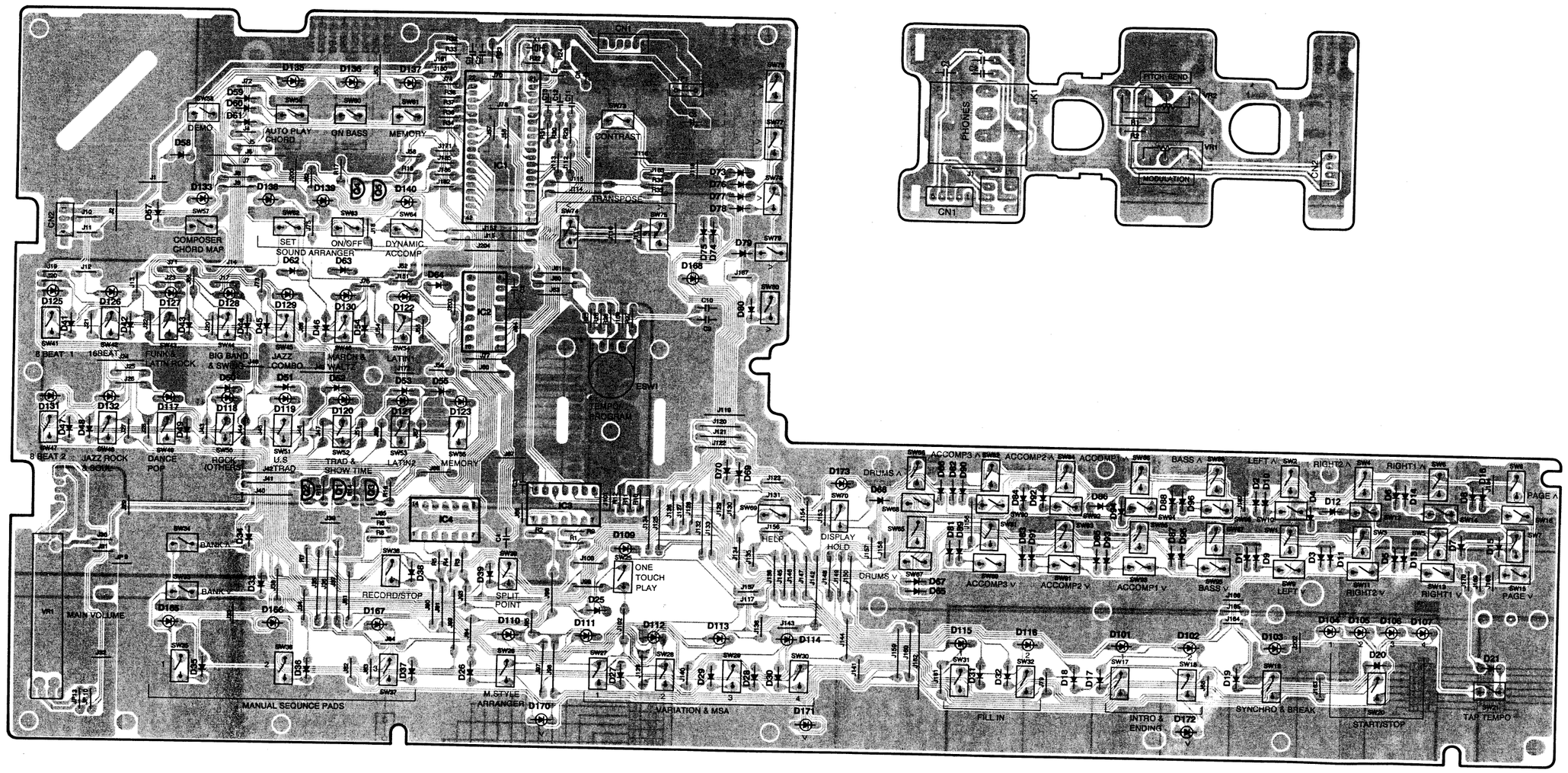


CPR


IC1
Microcomputer
VDD
VSS
XIN
XOUT
RST
VREF
ID
S IN
S OUT
CLK
CNTR1
ROTA
ROTB
AD0
AD1
AD2
AD3
SW0
SW1
SW2
SW3
SW4
SW5
SW6
SW7
CM0
CM1
CM2
CM3
CM4
CM5
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
+5D
+5MI
X1(4MHz)
R24 33K
R25 100
C1 0.1
C3 0.1
C4 6V100
IP1
CN 1
MAIN CN4
E
E
+5D
DATA
SCK
+5MI
R16 10K
R17 10K
R18 10K
R19 10K
R20 10K
R21 10K
R22 10K
R23 10K
R12 1K
R13 1K
R14 1K
R15 1K
Q1
Q2
Q3
Q4
PART SELECT
PANEL MEMORY
CONDUCTOR
D1 SW1 DIGITAL EFFECT
D9 SW9 SEQUENCER
D17 SW17 MEMORY B
D25 SW25 MEMORY A
D33 SW33 LEFT
D41 SW41 1
D49 SW49 DIGITAL DRAWBAR
D57 SW57 <
D2 SW2 DSP EFFECT
D10 SW10 EASY REC
D18 SW18 HARPSI & MALLET
D26 SW26 PIANO & E PIANO
D34 SW34 RIGHT 2
D42 SW42 2
D50 SW50 TECHNI CHORD
D58 SW58 <
D3 SW3 SUSTAIN
D11 SW11 PLAY
D19 SW19 SPECIAL PERC
D27 SW27 GUITAR
D35 SW35 RIGHT 1
D43 SW43 3
D51 SW51 BANK V
D59 SW59 <
D4 SW4 DIGITAL REVERB
D12 SW12 MIDI
D20 SW20 ORGAN & ACCORDION
D28 SW28 STRINGS & VOCAL
D36 SW36
D44 SW44 4
D52 SW52 BANK Λ
D60 SW60 <
D13 SW13 MEMORY & CONTROL
D21 SW21 REED
D29 SW29 BRASS
D37 SW37
D45 SW45 5
D53 SW53 SET
D61 SW61 <
D14 SW14 COMPOSER
D22 SW22 SYNTH LEAD
D30 SW30 FLUTE & ETHNIC
D38 SW38
D46 SW46 6
D62 SW62 EXIT
D15 SW15 SOUND
D23 SW23 SYNTH PAD
D31 SW31 BASS
D47 SW47 7
D16 SW16 SOUND EDIT
D24 SW24 PERC & EFFECT
D32 SW32 KEYBOARD PERC
D48 SW48 8
SEQUENCER D101
EASY REC D102
PLAY D103
MIDI D104
MEMORY & CONTROL D105
COMPOSER D106
SOUND D107
SOUND EDIT D108
DIGITAL EFFECT D149
DSP EFFECT D150
SUSTAIN D151
MEMORY A D109
PIANO & E PIANO D110
GUITAR D111
STRINGS & VOCAL D112
BRASS D113
FLUTE & ETHNIC D114
BASS D115
KEYBOARD PERC D116
LEFT D152
RIGHT 2 D153
RIGHT 1 D154
D117
D118
D119
D120
D121
D122
D123
D124
D155
D156
D157
1 D125
2 D126
3 D127
4 D128
5 D129
6 D130
7 D131
8 D132
TECHNI CHORD D158
DIGITAL DRAWBAR D159
DIGITAL REVERB D160
R4 68
R3 68
R2 68
R1 68
R11 68
R8 68
R7 68
R6 68
R5 68
R10 68
R9 68
C2 0.1
C3 0.1
IC2
IC3

CPL/CPR/HB P.C. Board

CPL (SXPG222211A)



HB (SXPG216411B)

CPR (

CPL

NOTES:

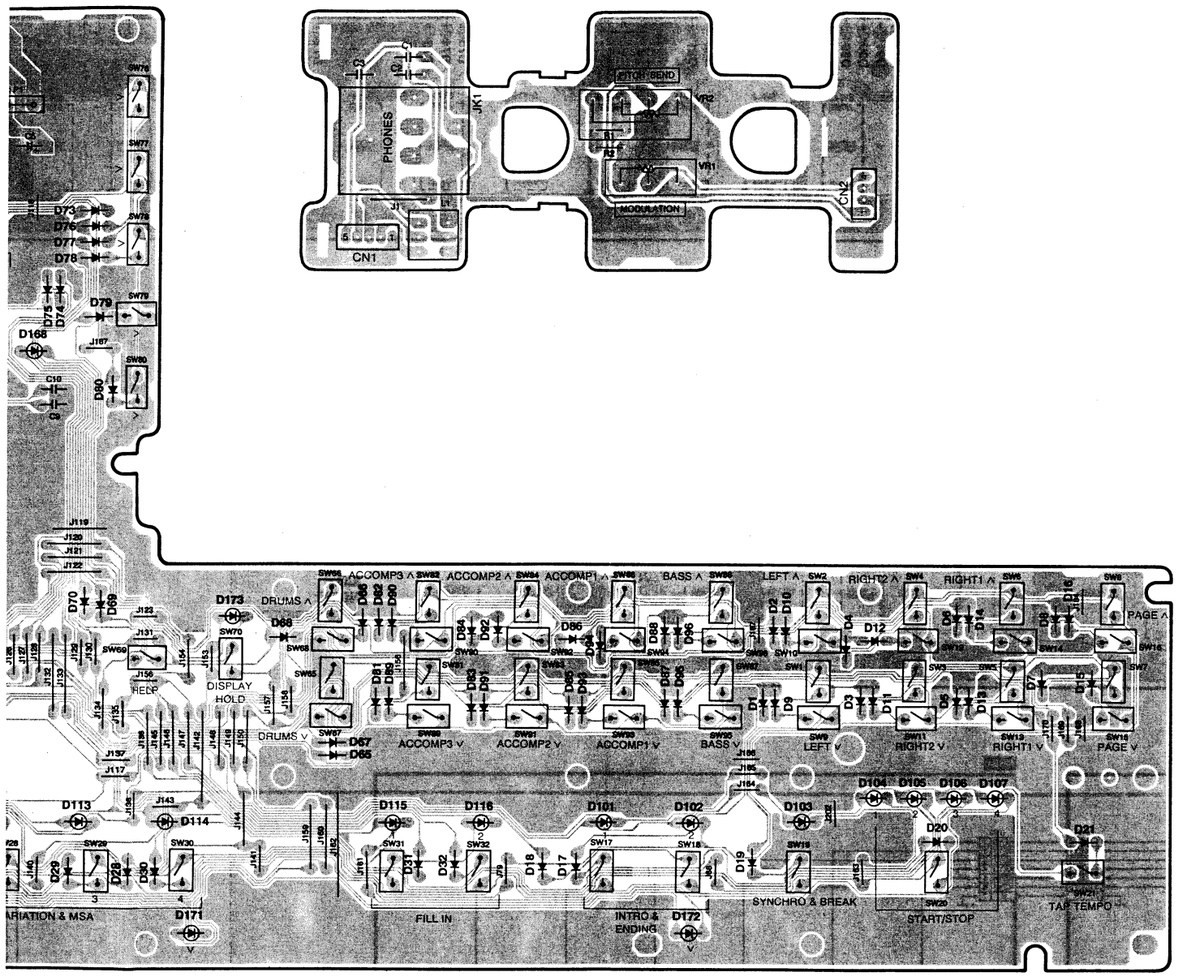
- IC'S
  - IC1: M37471M2196S
  - IC2: HD74LS138P
  - IC3, 4: HD74LS07P
- TRANSISTORS
  - Q1~5: 2SA830SB
- DIODES
  - D1~21, 25~39, 41~55, 57~70, 73~96: MA165
  - D101~104, 110~122, 125~132, 136, 137, 140, 170~173: LN282R
  - D105~107, 109, 123, 133, 135, 138, 139, 165~168: LN382G

CPR

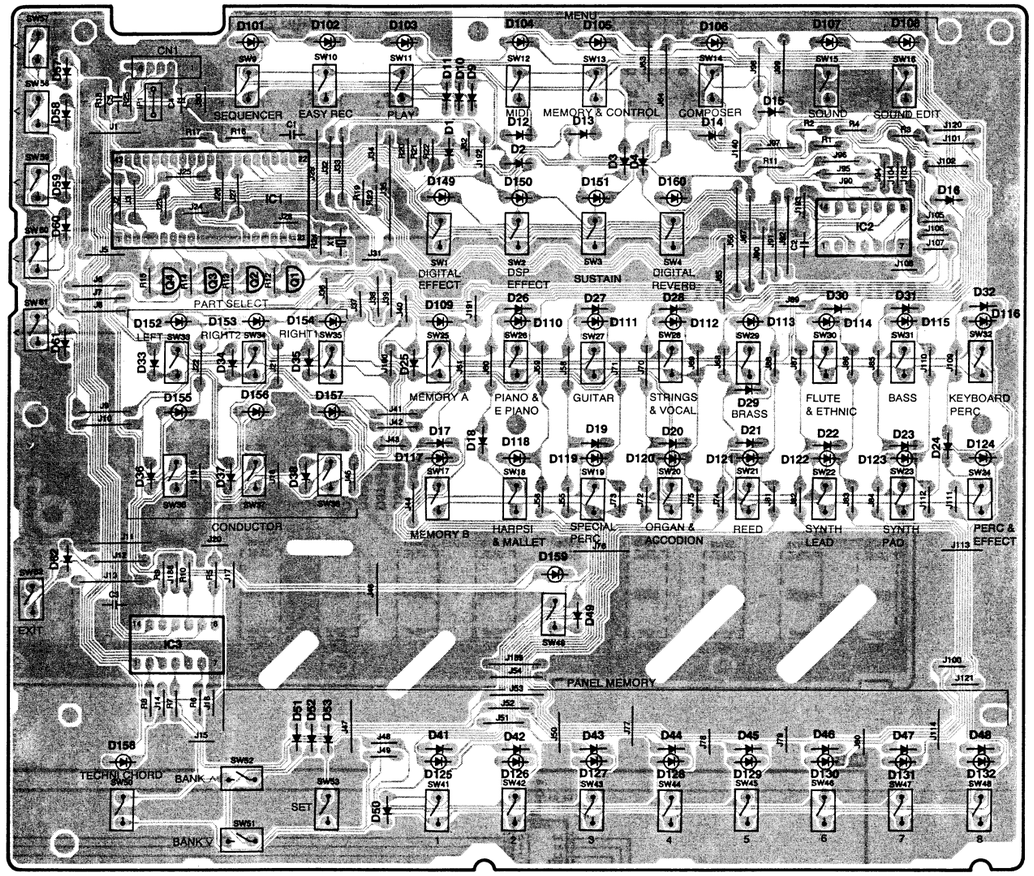
NOTES:

- IC'S
  - IC1:
  - IC2, 3
- TRAN
  - Q1~
- DIOD
  - D1~
  - 41~
  - D101
  - 125
  - D110
  - 149

HB (SXPG216411B)



CPR (SXPG222211B)



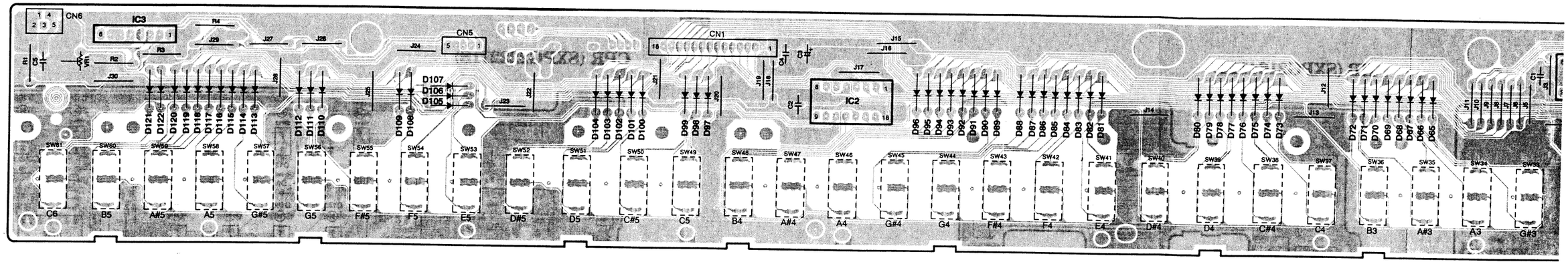
CPR

NOTES:

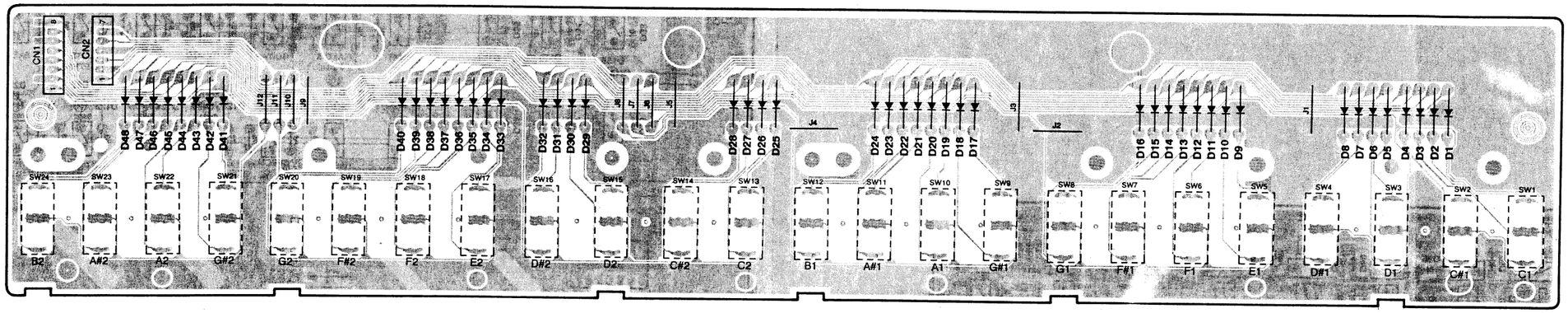
- IC'S
  - IC1: M37471M2196S
  - IC2, 3: HD74LS07P
- TRANSISTORS
  - Q1～4: 2SA1015-GR
- DIODES
  - D1～4, 9～38, 41～53, 57～62: MA165
  - D101～109, 117, 125～132: LN382G
  - D110～116, 118～124, 149～160: LN282R

MKB1/MKB2/INV

MKB2 (SXPG222111)



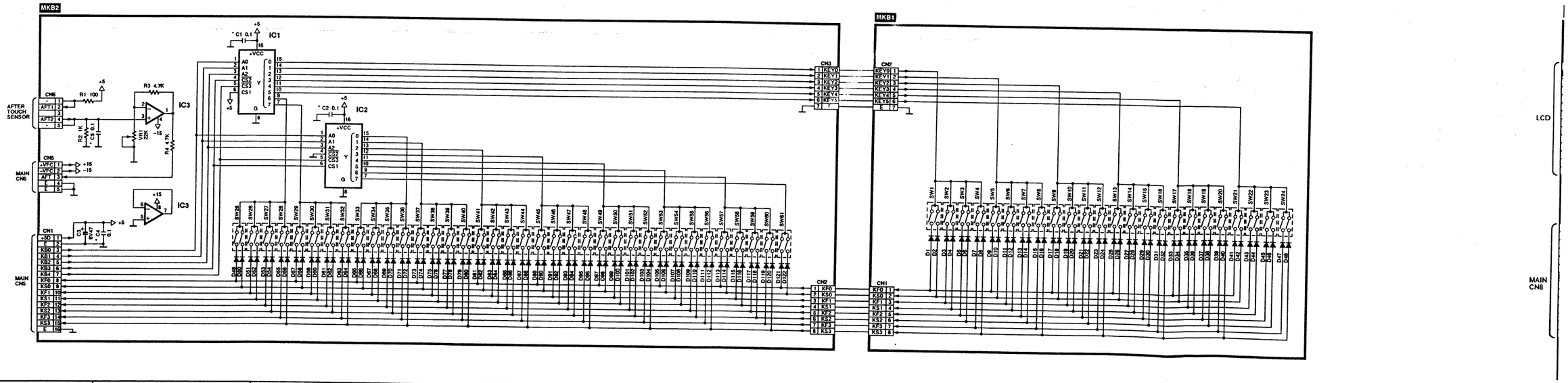
MKB1 (SXPG222011)

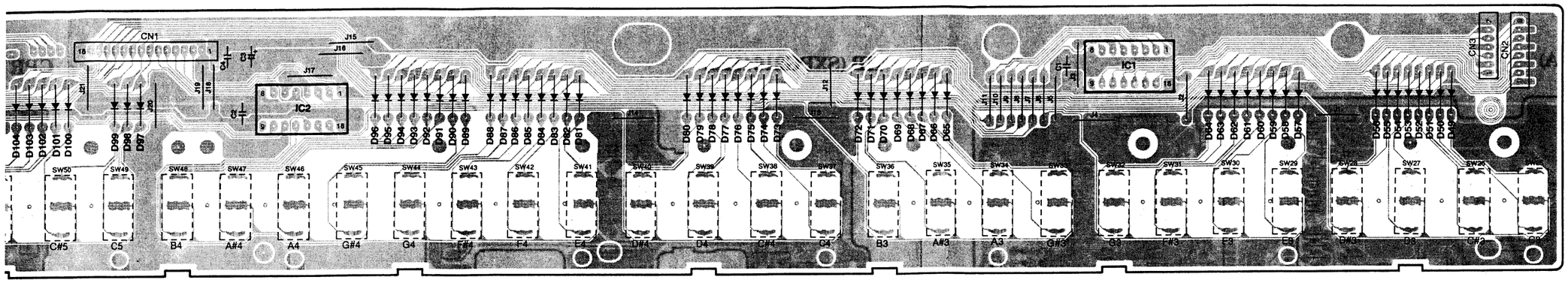

CN1
CN2
SW24 SW23 SW22 SW21 SW20 SW19 SW18 SW17 SW16 SW15 SW14 SW13 SW12 SW11 SW10 SW9 SW8 SW7 SW6 SW5 SW4 SW3 SW2 SW1
B2 A#2 A2 G#2 G2 F#2 F2 E2 D#2 D2 C#2 C2 B1 A#1 A1 G#1 G1 F#1 F1 E1 D#1 D1 C#1 C1

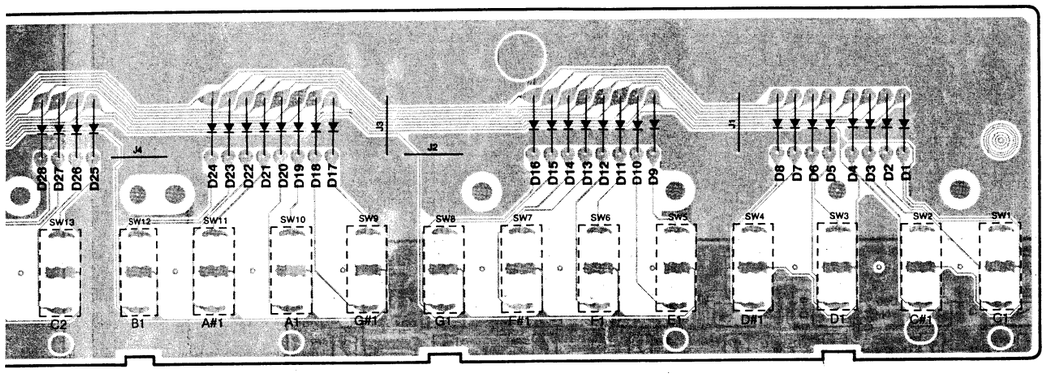
MKB1
NOTE:
- DIODES
  D1~48: MA165

MKB2
NOTES:
- IC'S
  IC1, 2: HD74LS138P
  IC3: M5218AL
- DIODES
  D49~122: MA165

INV
NOTE:
- TRANSISTORS
  Q1, 2: 2SC3940ARS







MKB1

NOTE:

- DIODES
  D1～48: MA165

MKB2

NOTES:

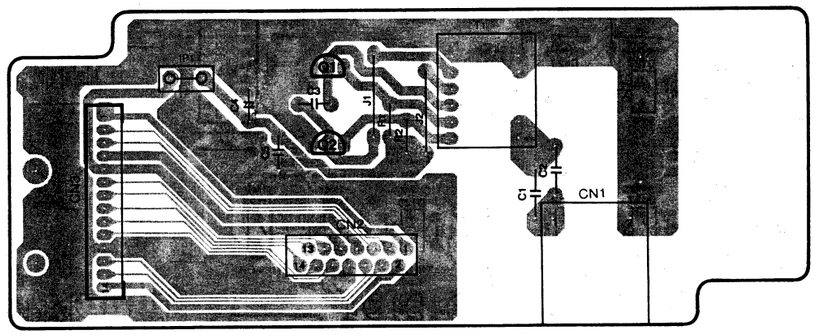
- IC'S
  IC1, 2: HD74LS138P
  IC3: M5218AL
- DIODES
  D49～122: MA165

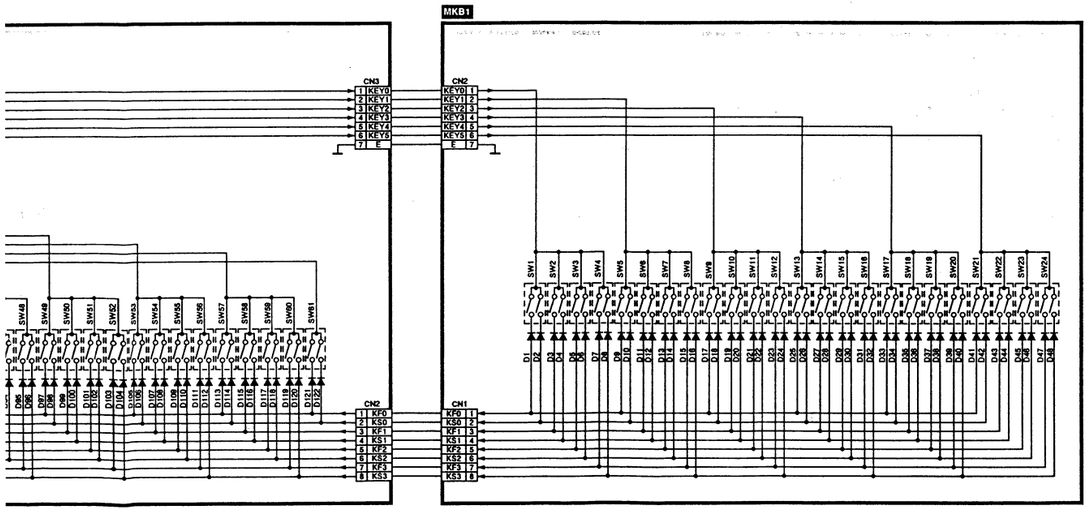
INV

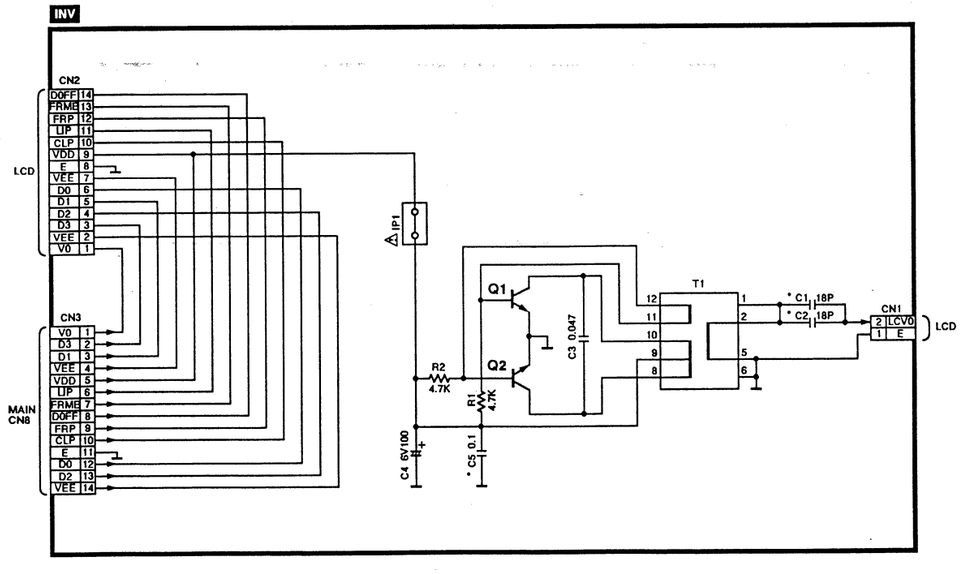
NOTE:

- TRANSISTORS
  Q1, 2: 2SC3940ARS

INV (SXPG222211C)







REPLACEMENT PARTS LIST.....P.C.B. and Wiring Parts

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.

■PRINTED CIRCUIT BOARD

	RTL	Area	Part No.	Description	P/S
○	RTL	EN EK EZ EW EF EA EH EP X XL XR XS XD XT XP	SXPG222411A	FAJ	1
○	RTL	M MC XM	SXPG222431A	FAJ	1
○	RTL	EN EK EZ EW EF EA EH EP XL XP	SXPG216451A	ACP	1
	RTL	M MC XM	SXPG216431A	ACP	1
	RTL	X XR XS XD XT	SXPG216441A	ACP	1
	RTL		SXPG216411B	HB	1
○	RTL	EN EK EZ EW EF EA EH EP X XL XR XS XD XT XP MC	SXPG222311	MAIN	1
○	RTL	M XM	SXPG222321	MAIN	1
○	RTL		SXPG222411B	HDCN	1
○	RTL		SXPG222211A	CPL	1
○	RTL		SXPG222211B	CPR	1
○	RTL		SXPG222011	MKB1	1
○	RTL		SXPG222111	MKB2	1
○	RTL		SXPG222211C	INV	1
○			QSLG016AA	LCD	1

FAJ FILTER & AMP CIRCUIT

	Ref. No.		Part No.	Description	P/S
	INTEGRATED CIRCUITS				
	IC4		M5218AL	OPERATIONAL AMPLIFIER	1
	IC5		SVIGM5216LL	OPERATIONAL AMPLIFIER	1
	IC6~10		M5218AL	OPERATIONAL AMPLIFIER	5
	IC11		AN6913	COMPARATOR	1
	IC16		QCPL-260L	PHOTO COUPLER	1
	IC18		M5218AL	OPERATIONAL AMPLIFIER	1
	TRANSISTORS				
S	Q1~3		2SA1015-GR	2SA933STRS (SUB. PART)	3
	Q4		2SA1534AR	TRANSISTOR	1
S	Q5		2SC1815GR	TRANSISTOR	1
	Q6	⚠	2SA1643	TRANSISTOR	1
S	Q7		2SC1815GR	TRANSISTOR	1
	Q11		2SC3940ARS	TRANSISTOR	1
	Q12	⚠	2SA1643	TRANSISTOR	1
	Q13	⚠	2SC4327	TRANSISTOR	1
	Q14, 15		2SK381CD	FET	2
	Q16	⚠	2SA1643	TRANSISTOR	1
	Q17	⚠	2SC4327	TRANSISTOR	1
S	Q18	⚠	2SC1815GR	TRANSISTOR	1
S	Q20		2SA1015-GR	2SA933STRS (SUB. PART)	1

	Ref. No.		Part No.	Description	P/S
	DIODES				
	D1~5		MA165	DIODE	5
	D6		EK04	DIODE	1
	D7		MA4082	ZENER, 8.2V	1
	D8		MA4220M	ZENER, 22V	1
	D9~12	⚠	SVDGERA1502	RECTIFIER	4
	D13~16	⚠	SVDS3V20	RECTIFIER	4
	D17~20		MA165	DIODE	4
	D21		MA4051	ZENER, 5.1V	1
	D22		MA165	DIODE	1
	D23	⚠	MA2062LF	ZENER, 6.2V	1
	D24		RK34LF	DIODE	1
	D25		MA165	DIODE	1
	D26		MA4051	ZENER, 5.1V	1
	D27		MA4082	ZENER, 8.2V	1
	D28		MA165	DIODE	1
	COILS				
	L1		SLCG3A121T	120μH	1
	L2~6		QLQGT3T150SA	15μH×3	5
	JACK				
	JK1~3		QJSG016AA	JACK	3
	JK4, 5		QJJG003AA	JACK	2
	JK6		SJJG100A	JACK	1
	JK7~10		QJJG003AA	JACK	4
	FUSES				
	F4, 6	⚠	XBA2C20TB0	T2A, 250V, EN EK EZ EW EF EA EH EP X XL XR XS XD XT XP	2
	F4, 6	⚠	XBA1C25NU100	2.5A, 125V, M MC XM	2
	F5	⚠	XBA2C16TB0	T1.6A, 250V, EN EK EZ EW EF EA EH EP X XL XR XS XD XT XP	1
	F5	⚠	XBA1C20NU100	2A, 125V, M MC XM	1
	RESISTORS				
	R00		ERDS2TJ681	680Ω	1
	R1		ERDS2TJ221	220Ω	1
	R2		ERDS2TJ102	1kΩ	1
	R3		ERDS2TJ330	33Ω	1
	R4		ERDS2TJ331	330Ω	1
	R5		ERDS2TJ151	150Ω	1
	R7		ERDS2TJ104	100kΩ	1
	R9, 10		ERDS2TJ680	68Ω	2
	R11, 12		ERDS2TJ102	1kΩ	
	R13, 14		ERDS2TJ103	10kΩ	2

Ref. No.	Part No.	Description	P/S
R15	ERDS2TJ104	100kΩ	1
R17, 18	ERDS2TJ102	1kΩ	2
R21, 22	ERDS2TJ223	22kΩ	2
R23	ERDS2TJ222	2.2kΩ	1
R45	ERDS2TJ683	68kΩ	1
R46	ERDS2TJ682	6.8kΩ	1
R47	ERDS2TJ683	68kΩ	1
R48	ERDS2TJ682	6.8kΩ	1
R49, 50	ERDS2TJ224	220kΩ	2
R58, 60	ERG1SJ680	68Ω, 1W, FLAME-PLOOF	2
R64	ERDS2TJ681	680Ω	1
R66, 67	ERDS2TJ682	6.8kΩ	2
R68	ERDS2TJ223	22kΩ	1
R69	ERDS2TJ105	1MΩ	1
R84, 85	ERDS2TJ102	1kΩ	2
R86, 87	ERDS2TJ823	82kΩ	2
R96~99	ERDS2TJ473	47kΩ	4
R100, 101	ERDS2TJ332	3.3kΩ	2
R102, 103	ERDS2TJ223	22kΩ	2
R104	ERDS2TJ103	10kΩ	1
R106, 108	ERDS2TJ472	4.7kΩ	2
R109, 110	ERDS2TJ103	10kΩ	2
R111	ERDS2TJ473	47kΩ	1
R113	ERDS2TJ181	180Ω	1
R114 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, FLAME-PROOF	1
R115, 116	ERDS2TJ331	330Ω	2
R117	ERDS2TJ124	120kΩ	1
R118, 119	ERDS2TJ331	330Ω	2
R120	ERDS2TJ473	47kΩ	1
R121	ERDS2TJ181	180Ω	1
R122 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, FLAME-PROOF	1
R123	ERDS2TJ181	180Ω	1
R124	ERDS2TJ124	120kΩ	1
R125	ERDS2TJ471	470Ω	1
R127, 128	ERDS2TJ103	10kΩ	2
R129	ERTD2ZHK153	15kΩ	1
R130	ER0S2CKF2201	2.2kΩ, ±1%	1
R131	ERDS2TJ223	22kΩ	1
○ R133	ER0S2CKF3901	METAL FILM RESISTOR, 1/4W	1
R134	ERDS2TJ224	220kΩ	1
R135	ERDS2TJ123	12kΩ	1
R136	ERDS2TJ332	3.3kΩ	1
R137	ERDS2TJ102	1kΩ	1
R138 ⚠	ERD2FCVG220	22Ω, 1/4W, FUSE TYPE	1
R139, 140	ERDS2TJ822	8.2kΩ	2
R142 ⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, FUSE TYPE	1
R150	ERDS2TJ332	3.3kΩ	1
R151	ER0S2CKF2201	2.2kΩ, ±1%	1
R152	ERDS2TJ102	1kΩ	1
R153, 154	ER0S2CKF2201	2.2kΩ, ±1%	2
R157	ERDS2TJ224	220kΩ	1
R159, 160	ERDS2TJ102	1kΩ	2
R161, 162 ⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, FUSE TYPE	2
R170	ERDS2TJ222	2.2kΩ	1
R172, 173	ERDS2TJ822	8.2kΩ	2
R174	ERDS2TJ222	2.2kΩ	1
R175	ERDS2TJ153	15kΩ	1
R176, 177	ERDS2TJ103	10kΩ	2
R178	ERDS2TJ153	15kΩ	1
R181	ERDS2TJ471	470Ω	1
R182	ERDS2TJ681	680Ω	1
R184	ERDS2TJ181	180Ω	1
R187	ERDS2TJ471	470Ω	1
R188	ERDS2TJ333	33kΩ	1
R189	ERDS2TJ472	4.7kΩ	1
R190	ERDS2TJ221	220Ω	1
R191	ERDS2TJ680	68Ω	
R192	ERDS2TJ151	150Ω	1

Ref. No.	Part No.	Description	P/S
R193, 194	ERDS2TJ223	22kΩ	2
R196 ⚠	ERX2ANJP1R0S	1Ω, 2W, FLAME-PROOF	1
R197, 198 ⚠	ERD25FVJ2R2	2.2Ω, 1/4W, FLAME-PLOOF	2
R199	ERDS2TJ151	150Ω	1
R200	ERDS2TJ103	10kΩ	1
R201	ERDS2TJ333	33kΩ	1
R202	ERDS2TJ154	150kΩ	1
R203	ERDS2TJ334	330kΩ	1
R204 ⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, FUSE TYPE	1
R205	ERDS2TJ104	100kΩ	1

CAPACITORS

C3	ECKR1E473ZV	0.047μF	1
C5, 6	ECRF1H104ZF	0.1μF	2
C7	ECKR1E473ZV	0.047μF	1
C9	ECKR1E473ZV	0.047μF	1
C10	ECKR1E473ZV	0.047μF	1
C11	ECKR1E473ZV	0.047μF	1
C12, 13	ECRF1H104ZF	0.1μF	2
C37, 38	ECEA1HKN010	1μF, 50V	2
C40	ECKR1E473ZV	0.047μF	1
C41	ECCR1H220J	22pF	1
C43	ECCR1H220J	22pF	1
C46, 47	ECEA1HKN010	1μF, 50V	2
C48, 49	ECQG1H102KZ	0.001μF	2
C50	ECKR1E473ZV	0.047μF	1
C51	ECKR1E473ZV	0.047μF	1
C52	ECRF1H104ZF	0.1μF	1
C53, 54	ECQB1H103JF	0.01μF	2
C55	ECRF1H104ZF	0.1μF	1
C56	ECEA1VKA100	10μF, 35V	1
C57~60	ECEA1CU472	4700μF, 16V	4
C61, 62	ECEA1HKA010	1μF, 50V	2
C63, 64	ECEA1EKA100	10μF, 25V	2
C67 ⚠	ECQE1A104M6	0.1μF, 125V	1
C68	ECEA1VKA470	47μF, 35V	1
C70, 71	ECQV1H104JM	0.1μF	2
C72	ECRF1H104ZF	0.1μF	1
C75, 76	ECQG1H472KZ	0.0047μF	2
C79, 80	ECQG1H472KZ	0.0047μF	2
C83, 84	ECQG1H152KZ	0.0015μF	2
C85, 86	ECCR1H470J	47pF	2
C88, 89	ECQV1H154JM	0.15μF	2
C90	ECQG1H102KZ	0.001μF	1
C91	ECCR1H220J	22pF	1
C92	ECRF1H104ZF	0.1μF	1
C93	ECQG1H102KZ	0.001μF	1
C94	ECCR1H220J	22pF	1
C95	ECRF1H104ZF	0.1μF	1
C96, 97	ECEA50Y2R2	2.2μF, 50V	2
C98	ECEA1VKA470	47μF, 35V	1
C101	ECQV1H334JM	0.33μF	1
C103	ECQV1H334JM	0.33μF	1
C104	ECRF1H104ZF	0.1μF	1
C105	ECQV1H683JM	0.068μF	1
C106	ECCR1H220J	22pF	1
○ C109	ECQV1H125JL	PLASTIC CAPACITOR	1
C111	ECQV1H683JM	0.068μF	1
C112	ECCR1H220J	22pF	1
C117, 118	ECRF1H104ZF	0.1μF	2
C120, 121	ECRF1H104ZF	0.1μF	2
C123	ECKR1E473ZV	0.047μF	1
○ C125	ECQV1H125JL	PLASTIC CAPACITOR	1
C126	ECEA1EKA100	10μF, 25V	1
C127	ECQV1H104JM	0.1μF	1
C128	ECEA1CKA100	10μF, 16V	1
C131	ECEA0JU471	470μF, 6.3V	1

Ref. No.	Part No.	Description	P/S
C132	ECQV1H104JM	0.1μF	1
C135	ECRF1H104ZF	0.1μF	1
C137	ECKR1E473ZV	0.047μF	1
C138, 139	ECRF1H104ZF	0.1μF	2
C140	ECEA1CKN100	10μF, 16V	1
C141	ECEA1CKA100	10μF, 16V	1
C145	ECEA1EKA100	10μF, 25V	1
C147	ECEA1HKA010	1μF, 50V	1

ACP AC POWER SUPPLY CIRCUIT

Ref. No.	Part No.	Description	P/S
LINE FILTER			
L1 ⚠	SLTGLF3	LINE FILTER	1
JACK			
JK1 ⚠	SJVD0203B	AC INLET	1
SWITCH			
S1 ⚠	SSRG100A	VOLTAGE SELECTOR, X XR XS XD XT	1
FUSES			
F1 ⚠	XBA1C20NU100	2A, 125V, M MC XM	1
F1 ⚠	XBA2C12TB0	T1.25A, 250V, X XR XS XD XT	1
F2, 3 ⚠	XBA2C06TB0	T630mA, 250V, X XR XS XD XT	2
F3 ⚠	XBA2C08TB0	T800mA, 250V, EN EK EZ EW EF EA EH EP XL XP	1
CAPACITORS			
C1 ⚠	ECKCVA1472MF	4700pF, LINE CAPACITOR	1
C2 ⚠	ECQU2A104MT	0.1μF, 250V, ACROSS-THE LINE CAPACITOR, EN EK EZ EW EF EA EH EP XL XP	1
C2 ⚠	ECQU2A104MN	0.1μF, 250V, ACROSS-THE LINE CAPACITOR, M MC XM X XR XS XD XT	1

HB HEADPHONES CIRCUIT

Ref. No.	Part No.	Description	P/S
COIL			
L1	LQGT3T150SA	15μ×3	1
JACK			
JK1	SJJG100A	JACK	1

Ref. No.	Part No.	Description	P/S
VARIABLE RESISTORS			
VR1	EVA07115B14G	10kΩ B	1
VR2	EVA07015B54G	50kΩ B	1
RESISTORS			
R1, 2	ER0S2CKF1001	1kΩ, ±1%	2
CAPACITORS			
C1, 2	ECQB1H333JF	0.033μF	2
C3	ECRF1H104ZF	0.1μF	1

MAIN MAIN CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	T7WU04F	IC, CMOS LOGIC	1
IC2	TC7W14F	INVERTER	1
○ IC3	TMP95C061AF	IC, MICROCONTROLER, 16BIT	1
○ IC4	D74HC139GS	IC, CMOS LOGIC	1
○ IC5	D74HC138GS	IC, CMOS LOGIC	1
○ IC6	D74HC21GS	IC, CMOS LOGIC	1
○ IC7	T7W139F	IC, CMOS LOGIC	1
○ IC8	QSIGCKN30AX	IC, 4M EP ROM	1
IC8-1	[M27C400210F1	(BLANK ROM)	1
○ IC9	QSIGCKN30BX	IC, 4M EP ROM	1
IC9-1	[M27C400210F1	(BLANK ROM)	1
○ IC10	QSIGCKN30CX	IC, 4M EP ROM	1
IC10-1	[M27C400210F1	(BLANK ROM)	1
○ IC11	QSIGCKN30DX	IC, 4M EP ROM	1
IC11-1	[M27C400210F1	(BLANK ROM)	1
○ IC13	QSIGT3C16060	IC, 16M MASK ROM	1
○ IC14	M5256CFP70LL	IC, S RAM	1
IC15	M5M44170AJ8S	4M BIT DYNAMIC RAM	1
IC16	SED1330FBA	LCD CONTROLLER	1
IC17	TC51832AFL85	256K BIT PSEUDO STATIC RAM	1
○ IC18	D72070GF3BE	IC, MICROCONTROLER, 8BIT	1
○ IC19	D74HC245GS	IC, CMOS LOGIC	1
○ IC20	D74HC541GS	IC, CMOS LOGIC	1
○ IC21, 22	D74HC374GS	IC, CMOS LOGIC	2
IC23	D74HC32GS	QUAD 2 INPUT OR GATE	1
○ IC24	TMP95C061AF	IC, MICROCONTROLER, 16BIT	1
○ IC25	QSIGCKN30EX	IC, 4M EP ROM	1
IC25-1	[M27C400210F1	(BLANK ROM)	1
○ IC28	TC183C230002	IC, MICROCONTROLER, 8BIT	1
○ IC29	QSIGH3C16DS6	IC, 16M MASK ROM	1
○ IC30	QSIGH3C16DS7	IC, 16M MASK ROM	1
○ IC31	QSIGH3C16DS8	IC, 16M MASK ROM	1
○ IC32	QSIGH3C16DS9	IC, 16M MASK ROM	1
○ IC37	D6383GF-3BA	IC, MICROCONTROLER, 16BIT	1
○ IC38	LC321664AJ80	1M BIT DYNAMIC RAM	1
○ IC39	TC7W74F	IC, CMOS LOGIC	1
IC40	PCM69AU	D-A CONVERTER	1
IC41	M5218AFP	OPERATIONAL AMPLIFIER	1
○ IC42	M5223FP	IC, LINER	1
○ IC44	D74HC245GS	IC, CMOS LOGIC	1
IC45	C7S32F	2 INPUT OR GATE	1
○ IC46	D74HC245GS	IC, CMOS LOGIC	1
IC47	TC7W08F	DUAL 2-INPUT AND GATES	1
○ IC48, 49	M5256CFP70LL	IC, S RAM	2

	Ref. No.	Part No.	Description	P/S
		TRANSISTORS		
	Q1, 2	2SB709AR	TRANSISTOR	2
	Q3	2SD601AQ	TRANSISTOR	1
	Q4	2SB709AR	TRANSISTOR	1
	Q5	2SD601AQ	TRANSISTOR	1
	Q6	2SB709AR	TRANSISTOR	1
	Q7~9	2SD601AQ	TRANSISTOR	3
	Q10	2SB709AR	TRANSISTOR	1
	Q11	2SD601AQ	TRANSISTOR	1
	Q12 ⚠	2SC4327	TRANSISTOR	1
		DIODES		
	D1~5	MA110	DIODE	5
	D6, 7	MA151WK	DIODE	2
	D8	MA8056	ZENER, 5.6V	1
○	D9	MA8062M	DIODE, SI, 200mA	1
	D12, 13	MA110	DIODE	2
	D14	MA8030L	ZENER, 3.1V	1
	D15, 16	MA110	DIODE	2
○	D17, 18	MA121	DIODE, SI, 100mA	2
○	D19	MA159A	DIODE, SI, 100mA	1
		OSCILLATORS		
○	X1	QSXG2F2400A	CERAMIC OSCILLATOR	1
	X2	EF0EC8004A5	8MHz, CERAMIC OSCILLATOR	1
○	X3	QSXG2F2400A	CERAMIC OSCILLATOR	1
○	X4	QSXG1I3386A	CRYSTAL OSCILLATOR	1
	X5	QSXG1A2500A	25MHz, QUARTZ OSCILLATOR	1
		COMPONENT COMBINATIONS		
	Z1, 8	EXBV8V470J	47Ω×4	2
	Z9	EXBS8V470J	47Ω×4	1
	Z10	EXBV8V103J	10KΩ×4	1
	Z11~14	EXBS8V103J	10KΩ×4	4
	Z15	EXBV8V102J	1KΩ×4	1
	Z16, 17	EXBS8V102J	1KΩ×4	2
	Z18	EXBV8V101J	100Ω×4	1
	Z19~26	EXBV8V470J	47Ω×4	8
	Z27, 28	EXBS8V103J	10KΩ×4	2
	Z29, 30	EXBV8V103J	10KΩ×4	2
	Z31	EXBV8V102J	1KΩ×4	1
	Z32, 33	EXBV8V221J	220Ω×4	2
	Z34, 35	EXBV8V472J	4.7KΩ×4	2
	Z36	EXBV8V102J	1KΩ×4	1
	Z37~39	EXBV8V103J	10KΩ×4	3
○	Z40~51	EXBV8V331J	RESISTOR RESISTOR	12
	Z52~55	EXBV8V221J	220Ω×4	4
	Z56	EXBV8V101J	100Ω×4	1
	Z57~59	EXBS8V102J	1KΩ×4	3
	Z60	EXBV8V102J	1KΩ×4	1
	Z61, 62	EXBS8V103J	10KΩ×4	2
		COILS		
	L1	QLQGT1B800MA	80μH	1
	L2, 3	QLQGT3T150SA	15μH×3	2
	L5, 6	QLBG002A	0.45μH	2
	L9, 10	QLQGT1B800MA	80μH	2
	L11, 12	QLBG002A	0.45μH	2
	L13	QLQGT1B800MA	80μH	1

	Ref. No.	Part No.	Description	P/S
		RESISTORS		
○	JR1, 3, 5, 7	ERD25V0R00	CARBON FILM RESISTOR	4
	R1	ERJ6GEYJ103V	10KΩ	1
	R2	ERJ6GEYJ221V	220Ω	1
	R3	ERJ6GEYJ474V	470KΩ	1
	R4~7	ERJ6GEYJ103V	10KΩ	4
	R8	ERJ6GEYJ104V	100KΩ	1
	R9	ERJ6GEYJ224V	220KΩ	1
	R10	ERJ6GEYJ101V	100Ω	1
	R11	ERJ6GEYJ222V	2.2KΩ	1
	R12, 13	ERJ6GEYJ102V	1KΩ	2
	R14	ERJ6GEYJ105V	1MΩ	1
	R15	ERJ6GEYJ331V	330Ω	1
	R16	ERJ6GEYJ473V	47KΩ	1
	R17	ERJ6GEYJ102V	1KΩ	1
	R18, 19	ERJ6GEYJ470V	47Ω	2
	R20, 21	ERJ6GEYJ102V	1KΩ	2
	R22	ERJ6GEYJ101V	100Ω	1
	R23, 24	ERJ6GEYJ221V	220Ω	2
	R26, 27	ERJ6GEYJ470V	47Ω	2
	R28	ERJ6GEYJ103V	10KΩ	1
	R29	ERJ6GEYJ472V	4.7KΩ	1
	R31~35	ERJ6GEYJ470V	47Ω	5
	R36	ERJ6GEYJ103V	10KΩ	1
	R37~39	ERJ6GEYJ470V	47Ω	3
	R40, 41	ERJ6GEYJ103V	10KΩ	2
	R44	ERJ6GEYJ473V	47KΩ	1
	R45	ERJ6GEYJ104V	100KΩ	1
	R46	ERJ6GEYJ223V	22KΩ	1
	R47	ERJ6GEYJ103V	10KΩ	1
	R48	ERJ6GEYJ102V	1KΩ	1
	R49	ERJ6GEYJ470V	47Ω	1
	R50, 51	ERJ6GEYJ101V	100Ω	2
	R52	ERJ6GEYJ103V	10KΩ	1
	R53	ERJ6GEYJ333V	33KΩ	1
	R54	ERJ6GEYJ473V	47KΩ	1
	R55	ERJ6GEYJ470V	47Ω	1
	R57	ERJ6GEYJ103V	10KΩ	1
	R58	ERJ6GEYJ682V	6.8KΩ	1
	R59	ERJ6GEYJ102V	1KΩ	1
	R60~64	ERJ6GEYJ103V	10KΩ	5
	R65	ERJ6GEYJ151V	150Ω	1
	R66	ERJ6GEYJ102V	1KΩ	1
	R67~69	ERJ6GEYJ101V	100Ω	3
	R70	ERJ6GEYJ102V	1KΩ	1
	R71	ERJ6GEYJ103V	10KΩ	1
	R73, 74	ERJ6GEYJ470V	47Ω	2
	R76	ERJ6GEYJ103V	10KΩ	1
	R77	ERJ6GEYJ470V	47Ω	1
	R78	ERJ6GEYJ105V	1MΩ	1
	R79~81	ERJ6GEYJ221V	220Ω	3
	R82	ERJ6GEYJ102V	1KΩ	1
	R83	ERJ6GEYJ151V	150Ω	1
	R84	ERJ6GEYJ102V	1KΩ	1
	R85, 86	ERJ6GEYJ152V	1.5kΩ	2
	R87	ERJ6GEYJ680V	68Ω	1
○	R88	ERJ6GEYJ820V	THICK FILM RESISTOR, 1/10W	1
	R89	ERJ6GEYJ101V	100Ω	1
	R90, 91	ERJ6GEYJ472V	4.7KΩ	2
	R92	ERJ6GEYJ103V	10KΩ	1
	R93~95	ERJ6GEYJ471V	470Ω	3
	R96, 97	ERJ6GEYJ103V	10KΩ	2
○	R98~100	ERJ6GEYF103V	THICK FILM RESISTOR, 1/10W	3
	R101~110	ERJ6GEY0R00V	0Ω	10
	R111	ERJ6GEYJ332V	3.3KΩ	1

Ref. No.	Part No.	Description	P/S
CAPACITORS			
C1, 2	ECUV1H100DCN	10pF	2
C3	ECUV1H104ZFX	0.1µF	1
C4	ECUV1E224ZFX	0.22µF	1
C5	ECUV1H104ZFX	0.1µF	1
C6	ECUV1H100DCN	10pF	1
C7	ECUV1H060DCN	6pF	1
C8	ECUV1H222KX	0.0022µF	1
C9~30	ECUV1H104ZFX	0.1µF	22
C31, 32	ECEA1HKA010	1µF, 50V	2
C33	ECUV1H104ZFX	0.1µF	1
C34	ECEA0JKA470	47µF, 6.3V	1
C35	ECUV1H104ZFX	0.1µF	1
C36	ECUV1H060DCN	6pF	1
C37	ECUV1H100DCN	10pF	1
C38	ECUV1H104ZFX	0.1µF	1
C39	ECUV1H223KBX	0.022µF	1
○ C40	ECUV1H182JX	MULTILAYER CERAMIC CHIP CAPACITOR	1
C41	ECUV1H472KBG	0.0047µF	1
C42	ECUV1H333KBX	0.033µF	1
C43	ECUV1H104ZFX	0.1µF	1
C44	ECUV1H101JG	100pF	1
C45~56	ECUV1H104ZFX	0.1µF	12
C57~64	ECUV1H151JG	150pF	8
C65	ECUV1H100DCN	10pF	1
C66	ECUV1H060DCN	6pF	1
C67~90	ECUV1H104ZFX	0.1µF	24
C91	ECEA1CKA100	10µF, 16V	1
C92	ECUV1H104ZFX	0.1µF	1
C93	ECUV1H102JX	0.001µF	1
C94	ECUV1H104ZFX	0.1µF	1
C95	ECRF1H104ZF	0.1µF	1
C96	ECUV1H102JX	0.001µF	1
C97	ECUV1H104ZFX	0.1µF	1
C100	ECUV1H030CCN	3pF	1
C101	ECUV1H100DCN	10pF	1
C102	ECRF1H104ZF	0.1µF	1
C103	ECEA0JKA470	47µF, 6.3V	1
C104	ECEA1CKA100	10µF, 16V	1
C105, 106	EECS5R5V105	1F, 5.5V, MEMORY BACK-UP	2
C107	ECUV1H332KB	0.0033µF	1
C108	ECUV1H333KBX	0.033µF	1
C109~112	ECUV1H104ZFX	0.1µF	4
C113	ECUV1H101JG	100pF	1
C114~116	ECUV1H104ZFX	0.1µF	3
C117	ECUV1H101JG	100pF	1
C118~122	ECUV1H104ZFX	0.1µF	5
C123	ECUV1H100DCN	10pF	1
C124, 126~128	ECUV1H104ZFX	0.1µF	4
C129	ECEA1HKA4R7	4.7µF, 50V	1

CPL CONTROL PANEL LEFT CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	M37471M2196S	16 BIT MICROCOMPUTER	1
IC2	HD74LS138P	3TO8 DECODER	1
IC3, 4	HD74LS07P	HEX BUFFERS	2
TRANSISTORS			
Q1~5	2SA830SB	TRANSISTOR	5

Ref. No.	Part No.	Description	P/S
DIODES			
D1~21, 25~39, 41~55, 57~70, 73~96	MA165	DIODE	89
D101~104, 110~122, 125~132, 136, 137, 140, 170~173	LN282R	LED (RED)	32
D105~107, 109, 123, 133, 135, 138, 139, 165~168	LN382G	LED (GREEN)	13
OSCILLATOR			
X1	EF0EC4004A3	4MHz, CERAMIC OSCILLATOR	1
SWITCHES			
ESW1	QSRGT002AA	ENCODER SWITCH	1
S1~21, 25~39, 41~55, 57~70, 73~96	EVQ21507K	PUSH SWITCH	89
IC PROTECOTR			
IP1 ⚠	ICP-N10T104	IC PROTECTOR	1
VARIABLE RESISTOR			
VR1	EVD07205B24G	20kΩ B	1
RESISTORS			
R1~12	ERDS2TJ680	68Ω	12
R14~18	ERDS2TJ103	10kΩ	5
R22	ERDS2TJ333	33kΩ	1
R23, 24	ERDS2TJ101	100Ω	2
R25, 26	ERDS2TJ472	4.7kΩ	2
R27, 28	ERDS2TJ473	47kΩ	2
R29~31	ERDS2TJ102	1kΩ	3
R32~39	ERDS2TJ103	10kΩ	8
CAPACITORS			
C1~4	ECRF1H104ZF	0.1µF	4
C6	ECEA0JKA221	220µF, 6.3V	1
C7	ECRF1H104ZF	0.1µF	1
C8	ECEA0JKA470	47µF, 6.3V	1
C9, 10	ECBA1H102KB	0.001µF	2
C11~13	ECRF1H104ZF	0.1µF	3

CPR CONTROL PANEL RIGHT CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	M37471M2196S	16 BIT MICROCOMPUTER	1
IC2, 3	HD74LS07P	HEX BUFFERS	2
TRANSISTORS			
S Q1~4	2SA1015-GR	2SA933STRS (SUB. PART)	4

Ref. No.	Part No.	Description	P/S
DIODES			
D1~4, 9~38, 41~53, 57~62	MA165	DIODE	53
D101~109, 117, 125~132	LN382G	LED (GREEN)	18
D110~116, 118~124, 149~160	LN282R	LED (RED)	26
OSCILLATOR			
X1	EF0EC4004A3	4MHz, CERAMIC OSCILLATOR	1
SWITCHES			
S1~4, 9~38, 41~53, 57~62	EVQ21507K	PUSH SWITCH	53
IC PROTECOTR			
IP1 ⚠	ICP-N10T104	IC PROTECTOR	1
RESISTORS			
R1~11	ERDS2TJ680	68Ω	11
R12~15	ERDS2TJ102	1kΩ	4
R16~23	ERDS2TJ103	10kΩ	8
R24	ERDS2TJ333	33kΩ	1
R25	ERDS2TJ101	100Ω	1
CAPACITORS			
C1~3	ECRF1H104ZF	0.1µF	3
C4	ECEA0JKA101	100µF, 6.3V	1
C5	ECRF1H104ZF	0.1µF	1

MKB1 MANUAL KEYBOARD 1 CIRCUIT

Ref. No.	Part No.	Description	P/S
DIODES			
D1~48	MA165	DIODE	48

MKB2 MANUAL KEYBOARD 2 CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1, 2	HD74LS138P	3TO8 DECODER	2
IC3	M5218AL	OPERATIONAL AMPLIFIER	1
DIODES			
D49~122	MA165	DIODE	74
VARIABLE RESISTORS			
VR1	EVSG0E1B223A	22kΩ B	1

Ref. No.	Part No.	Description	P/S
RESISTORS			
R1	ERDS2TJ101	100Ω	1
R2~4	ERDS2TJ102	1kΩ	3
RESISTORS			
C1, 2	ECRF1H104ZF	0.1µF	2
C3	ECEA0JKA470	47µF, 6.3V	1
C4, 5	ECRF1H104ZF	0.1µF	2

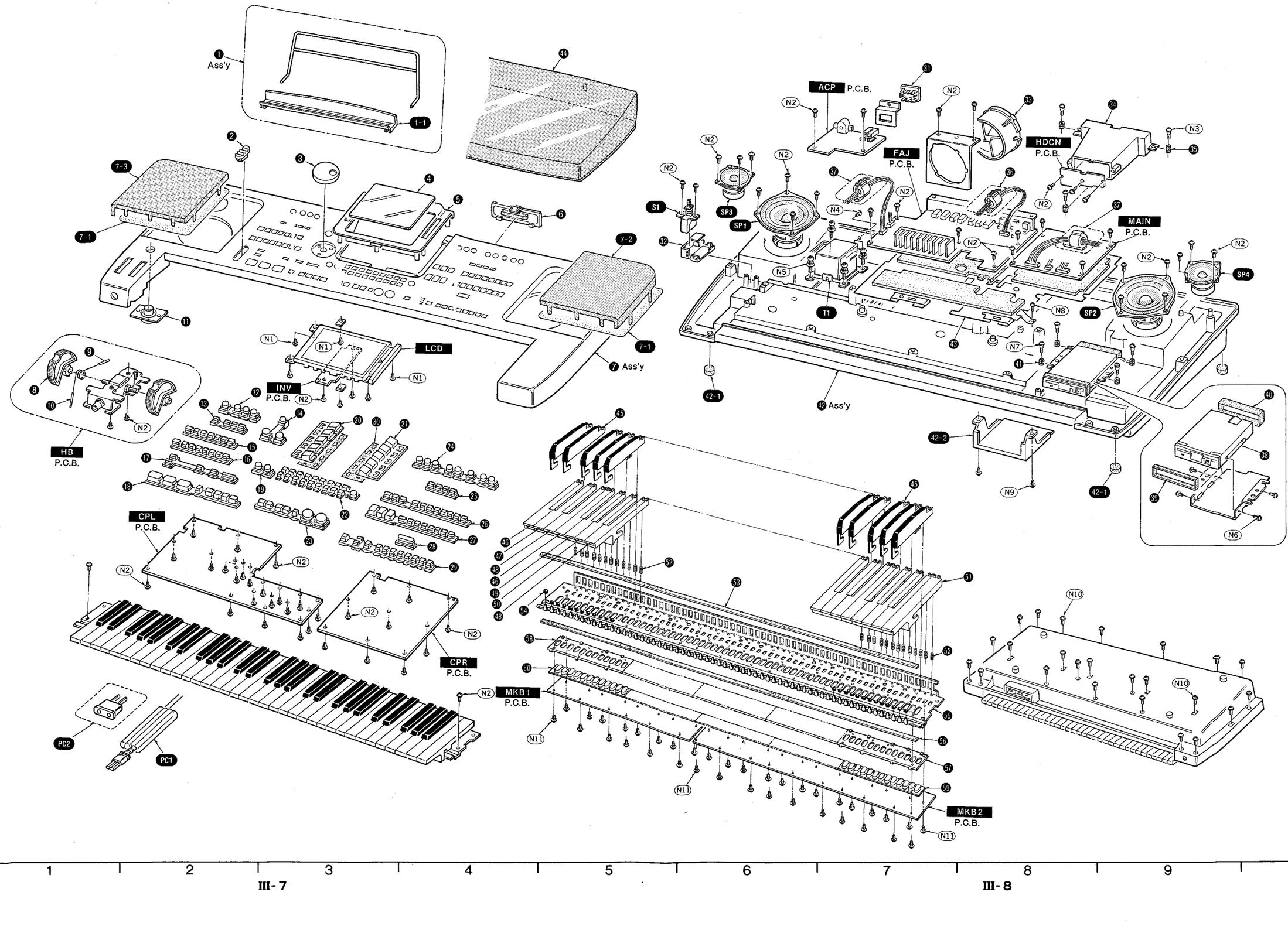
INV INVERTER CIRCUIT

Ref. No.	Part No.	Description	P/S
TRANSISTORS			
Q1, 2	2SC3940ARS	TRANSISTOR	2
TRANSFORMER			
T1	QTDG003A	TRANSFORMER	1
VARIABLE RESISTORS			
IP1 ⚠	ICP-N10T104	IC PROTECTOR	1
RESISTORS			
R1, 2	ERDS2TJ472	4.7kΩ	2
CAPACITORS			
S C1, 2	ECCD3F180JGE	18pF	2
C3	ECHS1473JZW	0.047µF	1
C4	ECEA0JKA101	100µF, 6.3V	1
C5	ECRF1H104ZF	0.1µF	1

■WIRING PARTS

Ref. No.	Part No.	Description	P/S
W1	QEXGSS16015A	CONNECTOR WITH WIRE	1
W2	QEXGSS05015A	CONNECTOR WITH WIRE	1
W3	QEXGSS04045A	CONNECTOR WITH WIRE	1
W4	QEXGSS05085A	CONNECTOR WITH WIRE	1
○ W5	QEXGSS06050B	CONNECTOR WITH WIRE	1
W6	QEXGVH03035B	CONNECTOR WITH WIRE	1
W7	QEXGSS14025A	CONNECTOR WITH WIRE	1
○ W8	QEXGSS06025A	COMMU CABLE W/OUT PLUG	1
W9	QEXGSS08015A	CONNECTOR WITH WIRE	1
W10	QEXGSS10010A	COMMU CABLE W/OUT PLUG	1
○ W11	QEXGSS11010A	COMMU CABLE W/OUT PLUG	1
○ W12	QEXGZA34015A	COMMU CABLE W/OUT PLUG	1
W13	QEXGVH03050C	CONNECTOR WITH WIRE	1
○ W14	QEXGVH03055E	COMMU CABLE W/OUT PLUG	1

CABINET PARTS LOCATION



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REPLACEMENT PARTS LIST.....Cabinet and Chassis Parts

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. ○ mark are new parts.
3. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
4. For part No. with area mark, check the area when placing an order.
5. The raw material indication for synthetic resin
   In order to facilitate classification of parts of synthetic resin manufacture and to promote the recycling of natural resources, a raw material symbol for such parts is indicated in the Ref. No./ Material column.

■CABINET & CHASSIS PARTS

	Ref. No.		Part No.	Description	P/S
			SWITCH		
	S1	⚠	ESB823V	POWER SWITCH	1
			SPEAKERS		
	SP1, 2		EAS14PL96A	14cm, 3Ω	2
	SP3, 4		EAS65PH31A3	6.5cm, 8Ω	2
			TRANSFORMER		
○	T1	⚠	QTPG1M040A	POWER TRANSFORMER, EN EK EZ EW EF EA EH EP XL XP	1
	T1	⚠	QTPG1M026A	POWER TRANSFORMER, M MC XM	1
	T1	⚠	QTPG1M021A	POWER TRANSFORMER, X XR XS XD XT	1
			POWER CORD & PLUGS		
	PC1	⚠	QJAG013AA	POWER CORD, M MC XM	1
	PC1	⚠	QJAG014AA	POWER CORD, XR XL	1
	PC1	⚠	SJAG65	POWER CORD, EN EZ EW EF EA EH EP X XS XT XP	1
	PC1	⚠	VJA0733	POWER CORD, EK XD	1
	PC2	⚠	SJP5213-1	ATTACHMENT PLUG, X XT XP	1
			CABINET PARTS		
S	1		QYAG3004AAK	MUSIC STAND ASS' Y	1
	1-1	PS	QMRG7065AAK	TABLE OF MUSIC BOOK	1
	2	ABS	SBNG7070B	KNOB, MAIN VOLUME	1
	3	ABS	QGUG3002BB	DIAL WHEEL	1
○	4		QKWG025AA	PLATE	1
○	5	PS	QMNG0042AB	ORNAMENT, PS	1
○	6		QKSGF017AA	LID	1
○	7		QYPG1062AB	CABINET BODY	1
○	7-1		QKNG1023A01	NET, TETORON	2
○	7-2		QGMG0016AA	NET, STEEL	1
○	7-3		QGMG0017AA	NET, STEEL	1
	8		SBNG4050A	WHEEL KNOB	2
	9		SUSG570A	SPRING	1
	10		SHGG5010A	TUBE	2
○	11		QGUG1365AA	PUSH BUTTON	1
○	12		QGUG1347AA	PUSH BUTTON	1
○	13		QGUG1348AA	PUSH BUTTON	1

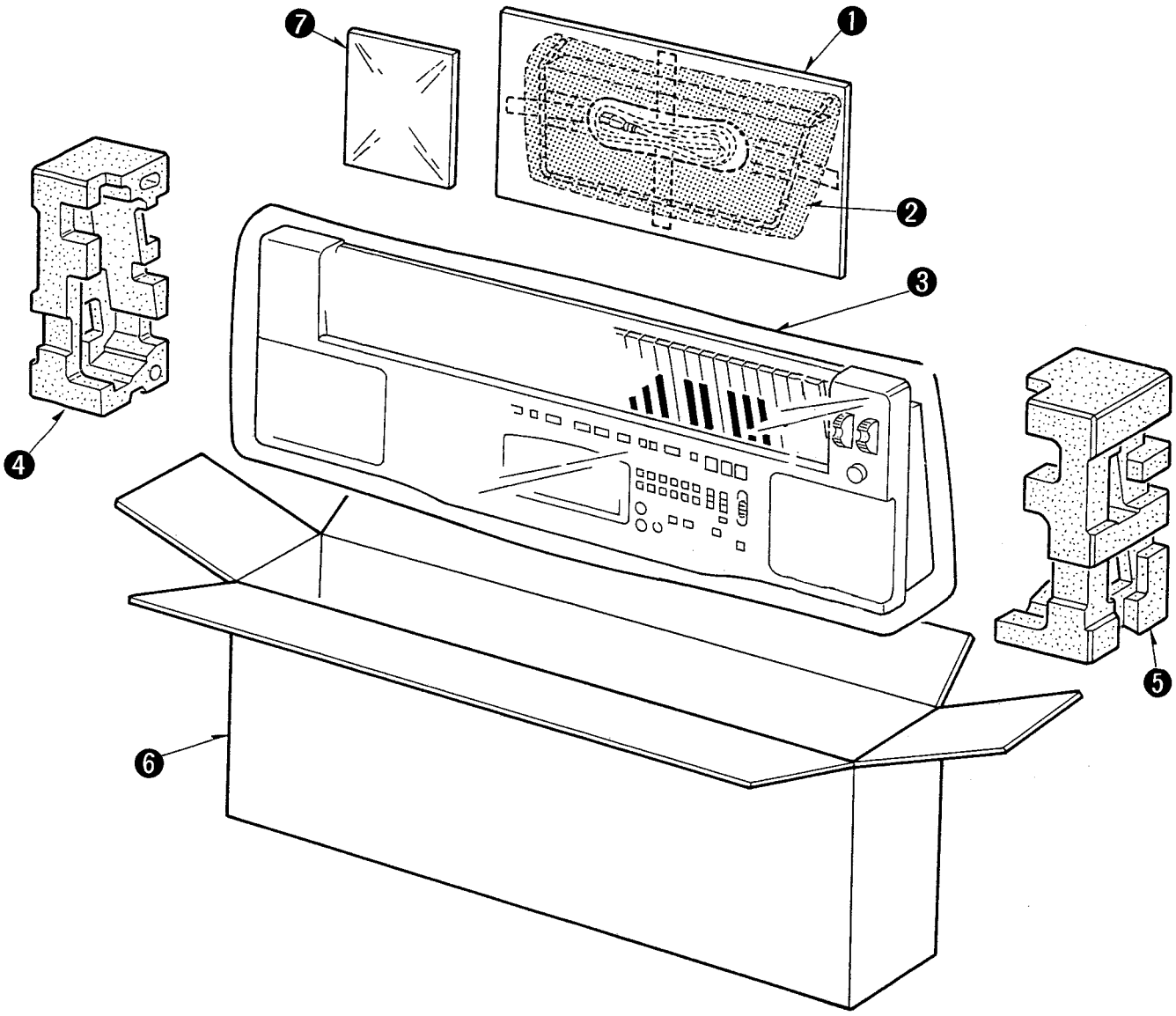
	Ref. No.		Part No.	Description	P/S
○	14		QGUG1351AA01	PUSH BUTTON	1
○	15		QGUG1349AA	PUSH BUTTON	1
○	16		QGUG1350AA	PUSH BUTTON	1
○	17		QGUG1352AA01	PUSH BUTTON	1
○	18		QGUG1353AA	PUSH BUTTON	1
○	19		QGUG1354AA	PUSH BUTTON	1
○	20		QGUG1421AA	PUSH BUTTON	1
○	21		QGUG1422AA	PUSH BUTTON	1
○	22		QGUG1355AA01	PUSH BUTTON	1
○	23		QGUG1356AA	PUSH BUTTON	1
○	24		QGUG1357AA	PUSH BUTTON	1
○	25		QGUG1358AA	PUSH BUTTON	1
○	26		QGUG1359AA	PUSH BUTTON	1
○	27		QGUG1360AA	PUSH BUTTON	1
○	28		QGUG1361AA	PUSH BUTTON	1
○	29		QGUG1362AA01	PUSH BUTTON	1
○	30		QMFG4170BA	FELT	2
	31	⚠	SJS9231A	AC INLET COVER, EN EK EZ EW EF EA EH EP X XS XD XT XP	1
	31	⚠	SJS9334A	AC INLET COVER, M MC XL XR XM	1
	32		SHRG8390A	COVER, POWER SW	1
	33		SYE1128-4	FAN	1
○	34	PS	QMNG0041AB	FRAME	1
	35		QMGG041AA	SPACER	3
	36		QLZG005A	CORE, EN EK EZ EW EF EA EH EP XL M MC XM	1
	37		QLZG005A	CORE, M MC XM	2
	38		QAUG012AA	DDR DRIVE UNIT	1
○	39		QMFG1209AA	FELT	1
	40		QMFG4103AA	FELT	1
	41		QMGG029AA	FLOATING RUBBER	4
○	42		QYKG127FB	CABINET BODY, EN MC M EK EZ EW EF EA EH EP XL XM XP	1
○	42		QYKG127EA	CABINET BODY, X XR XS XD XT	1
	42-1		SHGG3130A	FOOT RUBBER	4
	42-2	PS	QMQG0019AA	FD COVER	1
○	43		QSCG079A	MAGNETIC SHIELD	1
○	44		SQCG403A	TOP COVER	1
	45	AS	STBG2071A	BLACK KEY	25
	46	AS	STBG1101A	WHITE KEY (C & F KEY)	10
	47	AS	STBG1111A	WHITE KEY (D KEY)	5
	48	AS	STBG1121A	WHITE KEY (E & B KEY)	10
	49	AS	STBG1131A	WHITE KEY (G KEY)	5
	50	AS	STBG1141A	WHITE KEY (A KEY)	5
	51	AS	STBG1151A	WHITE KEY (TOP OCTAVE C KEY)	1

■PACKING PARTS

Ref. No.	Part No.	Description	P/S
52	SUSG271A	SPRING	61
○ 53	QMWG5002BA	AFTER SENSOR	1
54	SHGG9052A	KEY GUIDE RUBBER	61
55	QMWG3006BA	CHASSIS	1
56	QMFG1120CA	FELT	1
57 ABS	QMWG8030CA	SPACER (13PCS.ON ONE)	1
58 ABS	QMWG8031DA	SPACER (12PCS.ON ONE)	4
59	QMWG6009BA	RUBBER SWITCH (13PCS.ON ONE)	1
60	QMWG6010BA	RUBBER SWITCH (12PCS.ON ONE)	4
SCREWS			
N1	XTW3+8QFZ	SCREW	6
N2	XTW3+10Q	SCREW	72
○ N3	QHDG042AA	SCREW	3
N4	XTB3+10JFZ	SCREW	1
N5	QHDG002AA	SCREW WITH WASHER, EN EK EZ EW EF EA EH EP X XL XR XS XD XT XP	4
N5	XYN4+F16S	SCREW WITH WASHER, M MC XM	4
N6	XSS3+6FZ	SCREW	4
N7	QHDG023AA	SCREW WITH WASHER	4
N8	QHDG025AA	SCREW WITH WASHER	1
N9	XTW3+10QFZ	SCREW	2
N10	XTW3+16JFZ	SCREW	22
N11	XTW3+10T	SCREW	37

Ref. No.	Part No.	Description	P/S
PACKING PARTS			
○ 1	QPGG0325AA	CUSHION, PAPER	1
2 PE	SPHG1770A	POLYETHYLENE BAG	1
3 PE	QPFG002AA	POLYETHYLENE BAG	1
○ 4 PS	QPNG0525AA	PAD, PS	1
○ PS	QPNG0524AA	PAD, PS	1
○ 6	QPGG0312AA	PACKING CASE, PAPER	1
OPERATING INSTRUCTION MANUAL			
○ 7	QQFGKN3000AA	OPERATING INSTRUCTION MANUAL, EN	1
○ 7-1	QQTG0372A	DANSK	1
○ 7-2	QQTG0373A	ENGLISH	1
○ 7	QQFGKN3000CA	OPERATING INSTRUCTION MANUAL, M	1
○ 7	QQFGKN3000DA	OPERATING INSTRUCTION MANUAL, MC	1
○ 7-1	QQTG0373A	ENGLISH	1
○ 7-2	QQTG0377A	FRANCAIS	1
○ 7	QQFGKN3000EA	OPERATING INSTRUCTION MANUAL, EK XL XR XS	1
○ 7	QQFGKN3000PA	OPERATING INSTRUCTION MANUAL, EZ	1
○ 7	QQFGKN3000FA	OPERATING INSTRUCTION MANUAL, EA	1
○ 7	QQFGKN3000GA	OPERATING INSTRUCTION MANUAL, EW	1
○ 7-1	QQTG0377A	FRANCAIS	1
○ 7-2	QQTG0378A	DEUTSCH	1
○ 7-3	QQTG0379A	ITALIANO	1
○ 7	QQFGKN3000HA	OPERATING INSTRUCTION MANUAL, EF	1
○ 7-1	QQTG0377A	FRANCAIS	1
○ 7-2	QQTG0379A	ITALIANO	1
○ 7	QQFGKN3000JA	OPERATING INSTRUCTION MANUAL, EH	1
○ 17-1	QQTG0380A	NERDERLANDS	1
○ 7-2	QQTG0377A	FRANCAIS	1
○ 7-3	QQTG0378A	DEUTSCH	1
○ 7	QQFGKN3000KA	OPERATING INSTRUCTION MANUAL, EP XP XM	1
○ 7-1	QQTG0373A	ENGLISH	1
○ 7-2	QQTG0381A	ESPANOL	1
○ 7	QQFGKN3000LA	OPERATING INSTRUCTION MANUAL, X	1
○ 7-1	QQTG0373A	ENGLISH	1
○ 7-2	QQTG0381A	ESPANOL	1
○ 7-3	QQTG0382A	中文	1
○ 7	QQFGKN3000MA	OPERATING INSTRUCTION MANUAL, XT	1
○ 7	QQFGKN3000NA	OPERATING INSTRUCTION MANUAL, XD	1
○ 7-1	QQTG0373A	ENGLISH	1
○ 7-2	QQTG0382A	中文	1

PACKING



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ORDER NO.EMID951607
A5

Service Manual

Supplement - 2

PCM Keyboard

SX-KN3000

(M),(MC),(XM),(EN),(EH),(EF),(EZ),(EW),(EA),
(EP),(EK),(XL),(XR),(XS),(XD),(X),(XT),(XP)

Please file and use this supplemental manual together with the service manual for Model No. SX-KN3000 (Order No.EMID951588).

A revision due to improvement of the AFTER TOUCH is specified.
An error in the INTRODUCTION is corrected.

■ REPLACEMENT PARTS LIST (Refer to Page Ⅲ-10)

Ref.No.	Part No.		Description	P/S	Remark
	Original	**New**			
CABINET PARTS					
53	QMWG5002BA	**QMWG5002CA**	AFTER TOUCH SENSOR	1	Changed

■ MEASUREMENTS AND ADJUSTMENTS (Refer to Page Ⅰ-6)

ADJUSTMENT	MEASURING CONDITIONS	EQUIPMENT	ADJUSTMENT P.C.B.	ADJ. POINT	CONNECT METER TO	METER READING
AFTER TOUCH SENSOR Sensitivity	any position	Oscilloscope	MKB2 P.C.B	VR1	CN5-3pin	**5.0V(Correct)**
	1.Press any one key firmly and check the CN5-3pin voltage. The voltage will increase and become steady. 2.Adjust the voltage to **5.0V(Correct)** with VR1 at that time.					

■ Application of change

For production from OCT.1995. (Serial No.X95□□□□□)

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Technics

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ORDER NO.EMID951603
A5

Technical Information

PCM Keyboard/Hard Disk Drive

SX-KN3000/SY-HD1

(M),(MC),(XM),(EN),(EH),(EF),(EZ),(EW),(EA)
(EP),(EK),(XL),(XR),(XS),(XD),(X),(XT),(XP)

Please file and use this supplemental manual together with the service manual for Model No.SX-KN3000 (ORDER No.EMID951588)/SY-HD1 (ORDER No.EMID951589).

The SY-HD1 connection to the SX-KN3000 has been reinforced by the addition of screws.

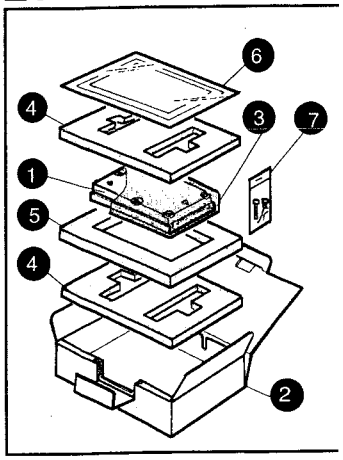
Change of parts list

■SY-HD1 REPLACEMENT PARTS LIST

Ref.No.	Part No.		Description	P/S	Remark
	Original	New			
1	QAQG008AA	**QAQG008BA**	HARD DISK DRIVE	1	Changed
6	QQFGHD1AA	**QQFGHD1CA**	OPERATING INSTRUCTION MANUAL *QN MC EW EF EA EH EP X XL XS XM XD XT XP *QK XR * QZ	1	Changed
6	QQFGHD1BA	**QQFGHD1DA**	OPERATING INSTRUCTION MANUAL M	1	Changed
7	————	**XTWSG2**	SCREW	2	Addition

*QN is equivalent to EN, QK to EK, and QZ to EZ.

■SY-HD1 PACKING

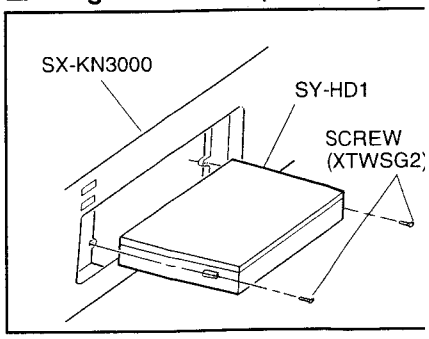


Repair service

■When screws (XTWSG2) can/cannot be used

SY-HD1 / SX-KN3000	Lot No. (First Lot~995□□□□□)	Lot No. (X95□□□□□~)
Lot No. (First Lot~ 995□□□□□)	Cannot be used, due to absence of screws and screw holes	Can be used in conjunction with **SX-KN3000 FRAME (QMNG0041BB)**
Lot No. (X95□□□□□~)	Can be used if **SY-HD1 (QAQG008BA)** is used	Can be used as is

■Using the screws (XTWSG2)



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Technics

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Printed in Japan
95113200 (S) K

■SX-KN3000 REPLACEMENT PARTS LIST (Refer to page Ⅲ-9)

Ref.No.	Part No.		Description	P/S	Remark
	Original	New			
			CABINET PARTS		
11	QGUG1365AA	QGUG1365BA	PUSH BUTTON	1	Changed
20	QGUG1421AA	QGUG1421BA	PUSH BUTTON	1	Changed
21	QGUG1422AA	QGUG1422BA	PUSH BUTTON	1	Changed
30	QMFG4170BA	QMFG4170CA	FELT	2	Changed
34	QMNG0041AB	QMNG0041BB	FRAME	1	Changed
			SCREWS & WASHERS		
N5	QHDG002AA	XYN4+F25	SCREW WITH WASHER EN EK EZ EW EF EA EH EP XL XP X XR XS XD XT	1	Changed
N5	XYN4+F16S	XYN4+F16	SCREW WITH WASHER M MC XM	1	Changed

■SX-KN3000 MAIN MAIN CIRCUIT (Refer to page Ⅲ-3)

Ref.No.	Part No.		Description	P/S	Remark
	Original	New			
			IC		
IC17	TC51832AFL85	LH5P832N-10	256K BIT PSEUDO STATIC RAM	1	Changed
IC42	M5223FP	M5223FPE1	IC, LINER	1	Changed
IC45	C7S32F	TC7S32F	2 INPUT OR GATE	1	Changed